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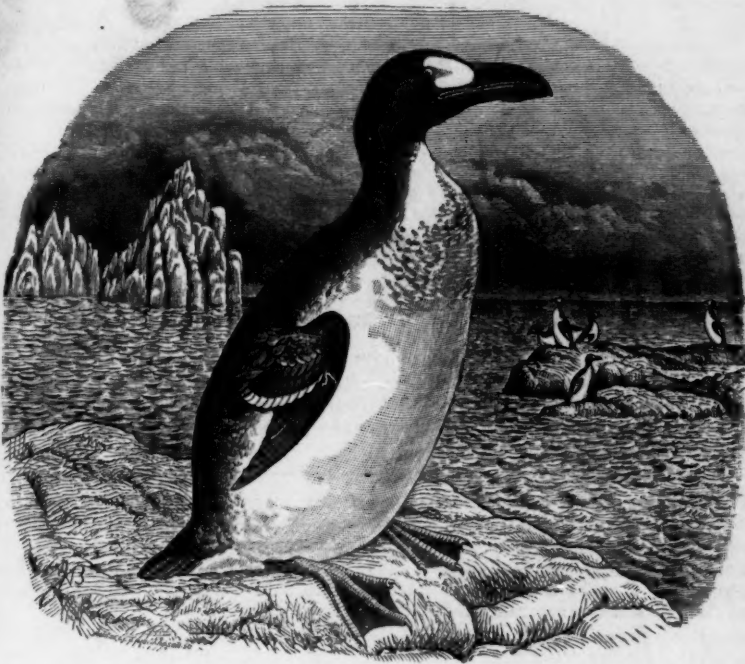
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E. J. ITINSON, LITH.

OTOPHANES MCLEODII BREWSTER.
EARED WHIP POOR-WILL.
ADULT FEMALE.

KETTERLINUS, PHO. ADAM

THE AUK:
A QUARTERLY JOURNAL OF
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VOL. VIII.

JULY, 1891.

No. 3.

OBSERVATIONS ON THE BIRDS OF JAMAICA,
WEST INDIES.

I. NOTES ON THE HABITS OF THE YELLOW-BILLED TROPIC
BIRD (*Phaethon flavirostris*).

BY W. E. D. SCOTT.

IN beginning a series of papers for this journal, recording the results of some observations carried on while in the Island of Jamaica, West Indies, during the past winter, I wish to publicly acknowledge my indebtedness and to express my thanks for the many courtesies extended to me by the following gentlemen: His Excellency Sir Henry A. Blake, K. C. M. G., Governor of the Island; the Hon. Neale Porter, Colonial Secretary, etc., etc.; the Hon. James Allwood, Under Colonial Secretary, etc., etc.; the Hon. Valentine G. Bell, C. E., Director of Public Works; the Hon. W. Bancroft Espeut, of Portland, and the Hon. W. Fawcett, B. Sc., F. L. S., Director of Public Gardens and Plantations. To Oscar Marescaux, Esq., of Kingston, and Robert B. Campbell, Esq., Superintendent of the Jamaica Railway, and particularly to Frederic Wesson, Esq., of New York City, I am under special obligation.

After some preliminary work carried on at Stony Hill, some nine miles north of Kingston, I was able to locate myself, about the 20th of December, 1890, on an estate known as Boston, in the parish of Portland, and belonging at this time to F. A. Jenoure, Esq., from whom I rented the house for the succeeding three months. Portland, named from the Duke of Portland, Governor of the Island from 1722-1726, is a parish at the north-east end of the island, extending from the seacoast to the summit of Blue Mountain range, the highest elevations of which are attained in this region. Boston is an old sugar estate of some eleven hundred acres in extent, comprising cultivated fruit land, pasture, and a large area of forest or woodland. It lies between Port Antonio, the principal town of the region, and Priestman's River, a hamlet at the mouth of the river of the same name, being nine miles from the former town and one mile from the latter. The extreme north-east point of the Island of Jamaica is just in front of the dwelling house of the estate.

There is little level land at this point even near the coast. The old house, remnant of the splendor of the 'sugar days,' stands back from the sea perhaps a quarter of a mile and at an elevation of about three hundred feet, so that the outlook on the sea is peculiarly fine. The hill on which the house is situated is abrupt in descent for nearly if not quite a hundred feet. Between the hill and the sea stretches a pasture of beautifully green grass, that is kept cropped to a short lawn-like turf by many sheep and cattle belonging to the place. On the far side of the field are many cocoanut palms, some thatch palms, and tall graceful bamboos. Passing through this growth one comes out on the edge of a low cliff, some forty feet in height, and at one's feet lies the Caribbean Sea.

Daily during the stay that was made at Boston looking over the panorama lying below and in front of the house, white Gull-like birds were to be seen passing now one way, now another, along the coast. In the distance they seemed very much like large Terns of some kind, and the people of the region were familiar with them under the name of 'Boobies.'

It was rarely calm enough to launch a boat through the surf during the early part of the time spent at Boston, and there were so many new and interesting problems presenting themselves in quick succession among the land birds, that weeks slipped by and

all that I knew about the white Gull-like birds that were present daily just a little way out at sea was what has been recorded in the preceding lines. I was talking about birds to some black men who were working at a new canoe, at a point about a mile from the house, where a break in the cliffs forms a little open bay (known as Big Bay), with a couple of hundred yards of hard sand beach where boats can be laid up and from which they could be launched when the surf is not too high. These men said that at a point just outside the bay and southwest of it half a mile was a cave where the 'Boobies' roosted and were almost always to be found.

After this again several weeks elapsed before the surf was subdued enough to be safely passed in a boat, but finally on the 25th of February, Mr. Dugmore, a friend who was with me, and to whom I am indebted for much aid in shooting specimens for me while on the island, went off at daylight to solve the question as to what the 'Boobies' were. He returned at about halfpast ten in the morning and I met him on the beach. There was a very considerable sea running that made the landing tedious, but the first bird my friend held up to me before the boat reached the shore, I recognized at once as the Yellow-billed Tropic Bird (*Phaethon flavirostris*).

I have since that time spent three days on the sea coasting along the north shore of Jamaica and have seen many of the birds in question both flying and alighted on the projections on the face of the cliffs. This trip was from March 17 to March 20 of the present year. During my stay at Boston we did not observe any kind of Gull or Tern and cruising as I have mentioned for quite a hundred miles along the shore not a Gull or Tern was noted, but the Yellow-billed Tropic Birds were constantly seen. This then is one of the homes of this species and a point where it is fairly abundant. The following records of the habits and breeding of the birds in question are based on notes made by myself and Mr. Dugmore.

During the months of December, January, February, and March, and presumably at other times of the year the species under consideration is quite common along the entire north side of the island, wherever the character of the shore affords the birds suitable shelter for resting by day or roosting at night. These cliffs are of white limestone and vary in height, seventy-

five feet in height from the sea level being probably the maximum. This limestone is of course quite porous and at many points on the island, north along the coast and inland, are noted caves and caverns of greater or less extent. Along the coast the constant beating of the surf has honey-combed this rather soft rock and the apertures vary from small, shallow indentations to holes of considerable size and depth and occasional caverns of very considerable magnitude, one of which I shall have occasion to describe presently in greater detail. Many of the smaller cavities have several openings, and it is in such places that the birds taken seem most attracted to rest and to roost. From my note book I copy the following accounts of three excursions made successively on February 25, 26, and 27 of the present year.

"Priestman's River, Jamaica, W. I., February 25, 1891.—During my stay at 'Boston' I have almost daily seen large white birds flying off shore at short distances, but having no good glass have been unable to identify them. Today Mr. Dugmore went after them and secured ten individuals. He says he saw no other kinds of 'Gulls'. Of ten birds taken eight were shot and two were taken from holes in the cliffs. The females indicate that the breeding season is near, they being about to lay, and it is probable that some have already laid."

"Same locality, February 26, 1891.—Mr. Dugmore went out today and again saw many Tropic Birds but no other kinds of 'Gulls'. Ten individuals were secured and as before two of these were taken alive from holes in the face of the rocks and eight were shot. All the birds examined yesterday and those examined today confirm me in my belief that they are actually breeding or about to breed. The two individuals taken yesterday alive from the holes in the cliffs, as well as those secured in a like manner today, are *all males*. These birds were taken about ten o'clock in the morning, and were probably resting. Many others were seen going in and out of the holes in inaccessible places. These holes are caused by erosion from the water dashing against the rock, and the cavities preferred seem to be those that are from two to five feet deep, not very high above ordinary high water mark, and such as have two or more openings.

"I learn from the natives that they are aware that these birds lay their eggs in these places and that they roost in such loca-

tions at night. The birds appear every morning just after the sun is up and are then to be seen in the greatest numbers. By ten o'clock they have either gone far out to sea to continue feeding or have retired to their roosting places in the cliffs. Their absence is noticeable from about the time in the morning indicated until just before sundown, when a few, not nearly so many as may be observed in the morning, are to be observed flying along outside of the cliffs. The native fishermen say that most of the birds return to their roosting places when it is almost too dark to see."

The following notes on coloration were made from twenty individuals in the flesh taken February 25 and 26, 1891.

"There is apparently no variation among the individuals I have examined that correlates with sex, and no external features by which the sex can be determined. But there is a very considerable difference in the length and color of the long central tail feathers that presumably correlates with the age of the individual. Frequently the webs of the long central tail feathers are pure dead white or nearly white and there is every gradation between this and deep intense salmon color. This salmon color in some individuals, presumably very adult ones, extends in the live bird to the feathers of the back and breast in a rather mottled manner. This color is evanescent, like the blush tint on some Gulls and Terns. The bills vary from light straw color to deep reddish orange, the straw-colored bills being lightest in those individuals which have the central tail feathers pure white. This phase of plumage is probably characteristic of birds of a year old and under two years old."

"Priestman's River, Jamaica, W. I., February 27, 1891.—Today Mr. Dugmore obtained fifteen individuals of *Phaethon flavirostris* and much additional information regarding the birds. Of these birds five were shot, eight were taken in a cave, which opened by a small mouth from the cliff, and two were secured in holes in the cliff as already recorded. The cave where the birds were found had a very small entrance, about large enough for a man to crawl into, in the face of the cliff. This was approachable only in the calmest weather, in a boat. The entrance led at once into a spacious chamber of irregular shape. Going directly back from the mouth the cavern was some sixty feet deep. It was at its widest point some seventy or eighty feet, and oval in

shape as a whole. The bottom was covered with coarse sand and gravel, and boulders of varying size, evidently having fallen from above, were scattered thickly over this floor except at the extreme back of the cavern furthest from the sea. The height of the roof or ceiling, which was of an uneven rough surface, was about twenty-five feet, and many bats were hanging wherever the projections or inequalities afforded them opportunity. Toward the back of this chamber five birds were secured, each one sitting on a single egg. The place chosen for the nesting site, for this is all it can be termed, was in all these cases where two boulders on the gravelly floor lay close together, just leaving room on the ground for the birds to crawl between them. Two birds were obtained in like situations that had not laid, and may have been simply resting. The females were in every case the birds that were sitting on the eggs, and it was quite evident upon dissection that the single egg forms the complement in these cases. The birds taken from the holes in the cliff, and also those taken in this cave, were very tame, and were captured readily without attempting to escape. Later on the same day a bird was found with a single egg laid at the bottom of one of the holes in the face of the cliff."

The eggs thus secured, six in all, are before me. They vary very considerably both as to color and markings as well as in size. No. 1 is not unlike the darker examples of the eggs of the Fish Hawk (*Pandion haliaëtus carolinensis*) in color and shape, though rather smaller being 2.30×1.70 inches. This egg contained a chick almost ready to be hatched. The extreme in variation as far as color is concerned is No. 2, a fresh egg, having a very light ground color, profusely and evenly spotted all over with irregularly shaped dark purplish brown spots. It measures 2.12×1.50 inches.

No. 3 is of a lavender brown color, and its profuse, irregular markings, which are but little darker, are of a similar shade. It is 2.22 long and 1.52 in the smaller diameter, and contained an embryo about half developed.

No. 4 is much the shorter of the six before me, but does not differ much from the others in its smaller diameter. It measures 1.98×1.51 inches. Its ground color is light cream. At the larger end this is profusely spotted with fine markings of a dark purplish brown. At the more acute or pointed end these mark-

ings are quite as profuse but of a very much lighter shade than those of the larger end. And there is an area between the two extremes almost devoid of any markings. This makes a sort of light belt about the egg, rather more than three-quarters of an inch wide. This egg contained a chick almost ready to be hatched. The other two eggs, Nos. 5 and 6, are similar in general appearance to Nos. 1 and 3 respectively and measure (No. 5) 2.33×1.60 inches, (No. 6) 2.18×1.55 inches. They were both slightly incubated.

There was no attempt at nest building in any of the cases noted, the egg being laid directly on the coarse sand or gravel, or on the dirt that had accumulated in the bottom of the hole.

I have seen these birds all the way along the north shore of the island from a point known as Hector's River on the east to Lucea on the west, wherever the cliffs afforded them shelter. They act very much like the larger Terns, the movements of the wings and method of feeding being very similar. The stomachs of the birds examined contained fragments of a species of squid or small cuttlefish, about four or five inches in length, and this was apparently the favorite food, though small fish from two to four inches in length were found mixed with the food before mentioned in four individuals.

On the 15th of March, a day or two before I left Boston, a native secured for me from one of the breeding places in the cliff, a young bird which I should think was at least a week or ten days old. It is No. 11325 of my Register and is a female. It is covered with rather sparse, long white down, and the quills of the wings and tail just begin to show. A space in front of the eye and reaching to the bill is bare of feathers. This bare region extends below the eye to the gape, and thence narrowly back of and narrowly around the eye. The color of the bare skin in this region in the live young bird is dark dull brown. Iris brown. Feet black. Bill yellowish with last quarter of an inch on both mandibles brownish black.

In breeding the birds seem eminently gregarious and the colonies at different points often reach an aggregate of at least fifty pairs. At sea, far out of sight of land, the birds are much more solitary in their habits, single birds being frequently met with, and it has been rare in my experience to meet with more than four individuals together in such locations. It may interest the

PLATE IV

readers of this paper to have quoted in connection with the present sketch, the experience of the late Philip Henry Gosse, Esq., published in March, 1847. On page 400 of 'The Birds of Jamaica,' the author speaks of the only Tropic Bird he was aware of under the head of *Phaëthon æthereus* Linn.—a single bird which he "presumes to have been an immature individual"; and says further: "It is mentioned to me as one of the constant frequenters of the Pedro Kays." This is the only individual from the mainland that came under the notice of this very careful observer, and it is the more curious, inasmuch as Mr. Gosse resided, while in Jamaica, on the sea coast. In speaking of his work, on page 70 of his 'Birds of Jamaica' he says, "Every day through the winter months, my almost undivided attention was given to birds; and . . . from August to April about thirteen hundred specimens of birds fell into my hands, more than one thousand of which were shot by myself and my servants." The Pedro Kays mentioned are four small islands, situated some forty to fifty miles southwest of Portland Point on the south coast of Jamaica. It seems hardly probable, that the Yellow-billed Tropic Bird could have been as common in Gosse's day as now, for so conspicuous a species as it is at present could hardly have escaped the observation of so keen a worker, aided as he was by friends in almost every part of the island, the parish of Portland being referred to many times in his work. In reviewing in the present series of papers the work that has been accomplished during the past winter, I shall have occasion from time to time to make further comparisons, for the very accurate records left by Mr. Gosse form a basis for such work, and elements have entered into the fauna of the Island that have greatly modified the avifauna as it existed a little more than fifty years ago.

YELLOW-BELLIED WOODPECKERS AND THEIR UNINVITED GUESTS.

BY FRANK BOLLES.

OF THE seven species of Woodpeckers which I have found in the region of Mt. Chocorua, New Hampshire, the Yellow-bellied

or Sapsucker is the most numerous. It may fairly be said to be abundant in that district. I base this statement upon my daily count of birds seen between April and the middle of October in the years 1889 and 1890. I frequently record seeing from seven to ten of these birds in a day. Their favorite haunts are mixed growths of young birch, larch, hemlock, maple and white ash bordering water or wet lands.

My attention has been drawn to the Yellow-bellied Woodpeckers on two accounts:—their quickness to observe and persistence in scolding my tame Owls when in the woods; and their destruction of certain forest trees.

Last summer I was led to spend a considerable time in close study of these Woodpeckers and their feeding habits by the peculiar relations which I noticed as seeming to exist between them and Hummingbirds. My observations were given point by my recollection of the difference of opinion among ornithologists regarding the diet of these Woodpeckers and their motive for tapping sap-yielding trees. I had heard it said that their sole reason for drawing the sap was to attract insects which they then fed upon. I had also heard that they ate the tender cambium layer which intervenes between the bark and inner wood of trees. I knew well that the birds were insect-eaters for I had often seen them fly into the air with the grace of a Tyrant Flycatcher or Cedarbird and capture insects on the wing.

On July 19, 1890 while watching a group of birds gathered in the woods around my tame Owl, Puffy, two Yellow-bellied Woodpeckers and a Hummingbird attracted my attention. The Woodpeckers were scolding the Owl, when the Hummingbird darted towards one of them, hummed before it, rushed at the other, and then seeing the Owl flew at him squeaking furiously. Then it flew back to the first Sapsucker and perched near it. On the 21st I returned to the spot and found near by a Sapsucker's 'orchard' of about a dozen canoe birches and red maples, most of which were dead, some decayed and fallen. The tree most recently tapped was a red maple about forty feet high and two feet through at the butt. The drills made by the Woodpeckers began eighteen feet from the ground and formed a girdle entirely around the trunk. This girdle contained over 800 punctures and was about three feet in height. In places the punctures or drills had run together causing the bark to gape and show dry wood within.

PLATE IV

The upper holes alone yielded sap. From this I inferred that what the birds obtained was the elaborated sap descending from the leaves through the fibres of the inner bark. I tasted the sap and found it unmistakably sweet. The leaves on branches above the drills drooped, those below were in good condition. I watched the drills on this tree from 12.30 P.M. until 2, and from 4 until 6. I was concealed in the bushes to the northwest of the tree. During almost all of this period of three and a half hours one or more Woodpeckers were in the tree engaged at the drills. They were a male, female and two young birds. Four visits were paid by Hummingbirds in the time named. The visitors were driven away by the Woodpeckers. At 5.30 I shot one of the young birds in order to determine the number of individuals using the orchard. His absence was unnoticed by the survivors.

The next day, July 22, I watched from 9.30 A.M. until 1 P.M. The male, female and one young bird were present, the tree being seldom left by all at once. Ten visits were paid by Hummingbirds; in five cases the birds reached the drills, and hovering, drank sap from one or more of them. In the other cases, the Woodpeckers being present, the Hummers were driven away. The work of the Woodpeckers seemed to me, armed as I was with an excellent opera glass, and sitting not more than thirty feet from the drills, to be perfectly plain in character. During the morning the female drilled four or five new holes. They were above others in perpendicular series. They yielded sap freely. She was closely attended by the young one, who occasionally swallowed pieces of the soft bark or cambium layer taken from the bottom of the drills. The female also ate some of it. When not drilling or resting the female dipped sap from the holes near by. The male drilled no holes but dipped in those yielding sap. The dipping was done regularly and rather quickly, often two or three times in each hole. The sap glistened on the bill as it was withdrawn. I could sometimes see the tongue move. The bill was directed towards the lower, inner part of the drill, which, as I found by examination, was cut so as to hold the sap. I looked carefully again and again to try to find insects in the sap, but none were there although numbers crawled upon the bark. Occasionally the birds by a nervous motion of the head caught an insect. There was no doubt as to when they did this, either on the bark or in the air, for in swallowing an insect they always occupied an appreciable time in the process.

During the forenoon I nailed to the tree near the drills two tiny cups of birch bark. These I filled with maple syrup. The birds, although not disturbed by these cups, did not then drink from them. In the course of the morning I shot a Crow and two Blue Jays from where I sat, but the Sapsuckers, although greatly startled by the reports, returned quickly after their first fright.

The day following, July 23, I was on duty at the tree from 9 A.M. until 12.30 P.M. I lay on the ground concealed by the spreading branches of a beech tree; my watch hung from a twig before my eyes, while equipped with pencil and paper, I took notes of all that occurred from minute to minute throughout the day. My record runs as follows:—

- Wednesday, July 23, 9 A.M. Arrive, climb tree, fill cups, male Sapsucker comes, scolds, goes off. No insects in the sap.
- 9.08. Male returns, dips from six holes.
- 9.09. Goes out on dead limb.
- 9.11. Hummer takes sap from two holes. I could hear no humming. Male quiet.
- 9.15. Young Woodpecker comes.
- 9.17. Goes out on limb, having dipped 37 times in 9 holes. Male flies.
- 9.20. Young dips 39 times from 13 holes.
- 9.22. Goes out on limb.
- 9.26. Male comes, dips 15 times from 9 holes.
- 9.27. Male drills a new hole. Hummer comes and goes; gets nothing.
- 9.28. Young flies north.
- 9.30. Male catches insect on the wing, goes on limb. Catches another insect on wing.
- 9.32. Hear a Hummer. Male drums.
- 9.34. Male dips from four holes. Flies west.
- 9.44. Male returns, dips 9 times, 7 holes, goes on limb—drums, preens.
- 9.47. Hear drumming.
- 9.50. Female comes from north, they chatter. Male flies north.
- 9.51. Female dips, goes on further side of tree and drills.
- 9.52. Comes to cups, tastes syrup in one.
- 9.53. Flies away, east.
- 10.01. Male comes from north, dips 17 times, 12 holes.
- 10.03. Flies north. Hear a Hummer.
- 10.09. Female comes from east, dips in drills and then from cup No. 1, 4 times.
- 10.10. Flies east.
- 10.37. Female comes.
- 10.38. Male comes. Female dips 4 times in cup No. 1 and goes east.
- 10.39. Male dips in 5 holes, taps on bark, preens.
- 10.42. Goes out on limb, scratches and preens. Seems to have lice.

- 10.45. Young comes.
10.47. Male goes to another tree, undrilled and begins drilling. Young dips in 40 drills.
10.48. Hummer comes. Young drives it off.
10.50. Young stands on cups and dips in a few holes many times.
10.53. Still dipping from same holes.
10.57. Still dipping at intervals.
10.58. Male comes, nervous, drills.
10.59. Young tries to drill, four feet above drills.
11.02. Male and young both drilling.
11.06. Male dips, goes out on limb.
11.10. Young dips.
11.15. Male dips, goes back on limb, flies east.
11.16. Young dips from cup No. 3 and from new holes.
11.17. Young digging in old holes.
11.19. Young dips from holes and dips twice in cup No. 3.
11.20. Goes on limb.
11.22. Dips from holes just made by male.
11.25-11.30. Still dipping at intervals.
11.32. Male comes from east. Young goes.
11.33. Male drills.
11.35. Looks at cup. Goes out on limb.
11.37. Catches insect on wing, brings it to the tree, crowds it into hole, and eats it piece-meal.
11.38. Female comes. Goes direct to cup No. 1 and dips 4 times.
11.40. Female dips in new hole and drills one.
11.47. New hole done, after $6\frac{1}{2}$ minutes hard chiselling.
11.49. She catches insect on the wing, puts it in a hole and eats it.
11.50. Hear a Hummer.
11.52. Female drills.
11.55. Dips, goes on limb, wipes beak and preens.
12 noon. Female completes toilet, dips and flies away.
12.05-12.10 I examine tree. What appeared to be drilling new holes was mainly clearing dry wood from existing drills and running several drills into one large one. The drills are always lower at the back next the wood than at the front, thus forming cups for the sap to collect in. The holes begun by the young did not reach the cambium layer. I find no insects in sap or syrup.
12.23. Female comes from north, dips, pecks and preens.
12.27. On limb preening.
12.30. Still there. I go home for dinner.
2.30. Return. Young in tree. I climb, he flies. I place a flame-colored nasturtium above cup No. 1.
2.37. Female comes, dips in new holes.
2.38. Sees nasturtium—petrified by astonishment.
2.39. Hitches towards flower, and touches it three times, with her bill. Satisfied, dips.

- 2.40. Drills and later does nothing.
- 2.48. Catches an insect on the bark by a quick pecking motion. Goes on limb.
- 2.51. Young comes, dips. No notice of nasturtium.
- 2.53. Young goes on limb. Female comes in and drills.
- 2.54. Young comes in and walks over nasturtium.
- 2.55. Female drinks from both cups, bill glistens.
- 2.57. Both fly. Young seems color blind.
- 2.58. Male comes, dips, goes near flower, does not notice it at all.
 3. Male preens, clinging to bark.
- 3.01. Female returns. Male dips. Both preen.
- 3.09. Male dips.
- 3.13. Male hops to nasturtium and touches it with bill three times. Looks at cup but dips in holes.
- 3.15. Nasturtium blows away.
- 3.19. Male dips. Female drinks 17 times from cup No. 1 and once from a drill.
- 3.22. Male sleepy, dips now and then. I peep, mew, whistle, hoot, bark and talk, but no sound makes the birds do more than move their heads.
- 3.28. Hummer comes; sees male and retreats.
- 3.29. Male dips.
- 3.30. Female flies east.
- 3.33. Male dips and goes on limb.
- 3.37. Male hangs wings and opens beak. Sits in sun.
- 3.42. Preen, comes in and dips, goes back.
- 3.47. Young comes, dips 30 times. Male goes on limb.
- 3.52. Hummers near, male comes in, very lively, dips.
- 3.56. Male drills. Young stays close to him.
- 3.58. Young goes on limb and hangs his wings down each side, so they show underneath the limb.
- 3.59. Male goes on limb.
 4. Male comes in and tries to catch passing flies.
- 4.02. Young wakes and preens.
- 4.04. Male begins new hole.
- 4.05. Male goes on limb. Young dips.
- 4.07. Young drinks 4 times from cup No. 3.
- 4.08. Male dips. Young goes on limb.
- 4.10. Male goes out.
- 4.13. Male comes in and dips.
- 4.17. Young flies in, male goes out. Young dips 48 times from drills.
- 4.25. Both quiet.
- 4.27. Male comes in. Young dips.
- 4.30. Male drills new hole higher up.
- 4.35. Young flies east.
- 4.40. Young comes from east, dips, male dips.
- 4.50. Male and young dipping.

- 4.55. I squeak, Hummer flies in and alights.
4.59. Female has been gone 90 minutes.
5. Male motionless. Young in next tree.
5.06. Male dips and flies away on seeing me.
5.07. Young comes in and dips 16 times from cup No. 3.
5.13. After dipping in holes goes to cup and dips 5 times.
5.14. Female comes from south, young flies south.
5.15. Female touches cup 3, then goes to cup 1 and dips 13 times.
5.16. Goes out on limb.
5.20. She drills, and continues to drill a long time.
5.35. Hummer comes, alights, flies away.
5.36. Young comes and dips. Female goes.
5.38. Young dips 7 times in cup No. 3, then in several new holes.
5.41. Male comes.
5.44. Young dips in cup No. 3, 7 times, flies off.
5.46. Male rattles around over cups and bark, but thus far I have not seen him drink from cups.
5.49. Young returns, dips 3 times from cup 3. He always wipes his bill in a drill after drinking syrup.
5.55. Young dips again in cup 3 and flies south.
5.56. Male flies in and clings close to cup.
6. Hummer near.
6.02. Male dipping and preening.
6.08. Young comes from south.
6.12. Male and young dipping.
6.18. A Hermit Thrush alights on the limb from which the Woodpeckers always take flight. Young flies at him twice and drives him away and out of the tree.
6.30. Young still dipping; I go home.

On July 24 instead of going to 'Orchard No. 1' as I shall call that already described, I went first to another half a mile northeast of it, where, in August, 1889, I had seen Sapsuckers drilling a canoe birch, and Hummingbirds and a Downy Woodpecker apparently sharing in the profits of the tree.

I reached Orchard No. 2 at 6.45 A.M. The tree in use last year was nearly dead. Two neighboring birches showing scars of earlier years were quite dead. All stood on the crest of a kame. About three rods along the ridge to the eastward a red oak and two or three canoe birches were in use by the birds. Five Sapsuckers including a male, female and three young were frolicking and dipping. The male was somewhat rough with the young birds. I stayed until 7.30. Hummingbirds made thirteen visits in that time and were generally allowed to dip freely. A Black-and-white

Creeping Warbler was driven from the tree. A Red-eyed Vireo was not disturbed in the higher foliage. Three separate times while one Hummingbird was dipping another came. The effect was astonishing. Volleys of squeaks proceeded from both birds. They dropped directly downwards from the tree about twenty feet, and when close to the tops of bushes and brakes began to go backwards and forwards like a long pendulum, the trunk of the tree coming opposite the lowest point of their course, and the arc made by them measuring about forty feet. Their humming and squeaking were continuous. At the end of the performance only one bird was to be seen and he quietly perched in the tree. I think this oscillating flight was made five or six times in each of the three performances which I witnessed.

The following evening, July 25, I visited Orchard No. 2 again. One Sapsucker and two Hummingbirds were at work dipping between 7.20 and 8. P. M. The pendulum act was not performed. The Hummers were not disturbed by the Woodpeckers. They continued to dip until it was too dark for me to see them although I could hear their wings.

On the preceding morning after my visit to Orchard No. 2, I spent a short time at Orchard No. 1. I found the birch bark cups empty. I filled them and as I reached the ground the young Woodpecker came and began dipping from cup No. 3. He dipped ten times, then poked into two drills and flew away. The female came immediately after, dipped in a few drills, saw the fresh syrup, dipped ten times in cup No. 1, and flew away. That day and the 26th were rainy. On the 27th at 6.15 A. M. I saw a male Hummer working on evening primrose blossoms. He ignored other flowers. I reached Orchard No. 1 at 6.35. The young one was there. I filled cup No. 1, the others being torn or warped. A Hummer flew almost into my face while I was in the tree. About twenty new drills had been made since the 23d, all being higher up the trunk than previous ones. About two inches in height had been gained. I remained on the watch nearly nine hours, going away only for meals and a brief visit to Orchard No. 2. During the nine hours the male paid ten visits to the tree, the female four and the young one three. Forty-one visits were made by Hummingbirds, in several instances two were in the tree at once. The tree swarmed with insects, mainly large flies. One or more butterflies came. Early in the morning

I added brandy and sugar to the maple syrup in the cup. The Hummingbirds with one exception dipped only in the drills. In one case a Humming bird drank for sixty seconds (including a rest of ten seconds) from the cup. He then flew away. The young Sapsucker dipped only from the drills, the female dipped thirty times or more from the drills and twenty-five times from the cup. The male dipped fifty-four times from the drills and worked a little in deepening holes, drank sixty-six times from the cup and caught twenty insects some on the wing, some on the edge of the cup.

I noticed with surprise that the Hummingbirds in more than one instance took sap while clinging to the bark with their feet, their wings being at rest. I have been told by a careful observer that they cling to the trumpet flower in the same way while crowding themselves into its mouth to draw its sweets.

My notes refer again and again to the spiteful treatment of the Hummers at Orchard No. 1. On the other hand at Orchard No. 2 they say "Male and young one dipping. Hummer comes in and dips several times *between them* and they offer no objection."

In spite of the fact that one young bird had been shot from the family at Orchard No. 1 the tree was without Woodpeckers only about one hour out of the nine that I watched it on July 27.

On the 28th I arrived at Orchard No. 1. at 7.28 A. M. and watched it for two hours. On my arrival I filled one cup with brandy, sugar and syrup, and another, a new one, with pure brandy and a drop or two of the mixture on top. A Hummingbird's arrival at 7.30 brought the male Sapsucker from a neighboring tree. The Hummer was driven away. The Woodpecker dipped several times and then tried the pure brandy. He shook his beak and hitched away from the cup. Then he went out on the limb used as a regular point of departure and flew north, as my notes say: "pointing and flying as though for a long trip." At 8.13 a male Hummer drank forty seconds from the cup containing the brandy and syrup mixture. At 8.16 a female Hummer drank twenty seconds at the same cup. Both ignored the drills. At 8.42 a female Hummer while drinking was attacked again and again by the wasps and bees surrounding the tree and compelled to defend herself. At 9.05 the female Woodpecker arrived, dipped in a few holes and then went to the brandy cup. She drank

six times, then went out on the limb and presently began shaking her head violently, showering drops from her beak in every direction until she had thrown up what I estimated to be two teaspoonfuls of liquid. She flew away eastward but soon returned and remained until 9.30 when she flew north "as for a long trip."

I then hurried to Orchard No. 2 and remained there from 10.07 until 11.15. On some of the trees at this orchard a thick growth of small sucker branches was conspicuous just below the drills. I think it was caused by them. It served as a screen for the Sapsuckers. During this hour three Woodpeckers were at work dipping and occasionally catching some of the numerous insects of which the air was full. Seven visits were paid by Hummingbirds. One of the trees in use by the Woodpeckers, Hummers and insects was a red oak. The drills in it were very small and round. At 11.15 I went into a large swamp to the east of Orchards 1 and 2 in search of fresh evidence. After walking a quarter of a mile I paused and hooted like a Barred Owl. A young Sapsucker promptly appeared, and a moment later a Hummingbird, which alighted close to the Woodpecker. Seeing no Owl, the Hummingbird flew off towards the point from which the Sapsucker had come. I followed and found Orchard No. 3 consisting mainly of trees girdled long ago and now dead. The tree in use was a red maple. Its drills were about twenty-five feet from the ground. One bird was dipping; two more came soon after. After a brief stay I went home to dinner. Returning at 2.45 I stayed until 4.15. A Downy Woodpecker passed without going to the drills. At 3.35 I killed two young Woodpeckers with a single charge of dust shot. A few moments later a Hummingbird alighted in one of the dead maples. At 4.10 I was drawn away by the hooting of a Barred Owl and did not return to Orchard No. 3 until Aug. 7 when I found only one Sapsucker at work, a young one, which I shot. I do not think that I found the principal trees in this orchard.

I ended my observations of July 28 by a visit of twenty-five minutes at 'Orchard No. 4' which I had first seen three years before. It consisted of a large number of dead and a few living trees which stood on a delta formed by the Chocorua River at its point of union with Chocorua Lake. The part of the orchard in use was a birch from whose root rose four major trunks quickly subdividing into fifteen minor stems each rising to a height of

over thirty feet. All of these fifteen trunks were dead or dying. Only seven of them bore leaves. I reached this orchard at 6.25 P.M. and finding no birds in sight placed Puffy on a stump close to the drills which were only seven to nine feet from the ground. Instantly a Hummingbird appeared, buzzing and squeaking, and the next moment a female Sapsucker came into the tree scolding. I removed Puffy and soon after the Hummingbird began dipping, giving a squeak each time he dipped. At 6.50 the Hummer, again discovering Puffy, flew within ten inches of his eyes, buzzed indignantly and flew away.

On Aug. 5 from 3 to 4 P. M. no Sapsuckers came to Orchard No. 4 and only one Hummer. A high wind was blowing.

On August 7 I visited Orchard No. 1. About twenty new holes had been made since July 28 and great quantities of frothy sap were wasting. The sap was as sweet as though artificially sweetened. I saw one young Sapsucker and one Hummingbird; neither of them dipped. The Woodpecker caught several insects.

On Aug. 8 I reached Orchard No. 4 at 6 A. M. At 6.03 a Hummer came. At 6.06 a young Sapsucker came and began dipping. I had with me, instead of one of my Barred Owls, one of three young Screech Owls which Mr. Batchelder had confided to my care for the season. 'Scops' was placed in a conspicuous position in the heart of the orchard. The Sapsucker had scarcely begun dipping when he saw the Owl and raised the alarm. Over thirty birds came, including two Hummers. By 6.30 the noise subsided, and the Sapsucker, who had not left the tree at all, resumed his dipping. A male Hummer was also dipping at 6.31. At 6.42 the Sapsucker was dipping within seven feet of my head, and the Hummer was perched close by. At 6.47 the Hummer buzzed in Scops' face and then perched again. At 6.52 another Hummer came and both flew away, at 6.54 both came back, but went again. At 6.56 Scops, whose wing was clipped, jumped nearly six feet at the young Sapsucker, at whom he had been glaring for some time. The Woodpecker flew with a loud cry, scolded for a long time and then disappeared. I nailed a birch bark cup to one of the stems and while doing it a Hummer came and looked at me. Later, he came again, looked at the cup and dipped at drills close above it.

I spent from 10 A. M. until 12.34 at Orchard No. 2 for the

purpose of shooting all Sapsuckers seen there. I found last year's tree again in use and those in use July 24 and 25 temporarily abandoned. From 10 to 10.48 the Sapsuckers seen spent all their time catching insects on the wing, sometimes flying fifty feet for them. Hummingbirds were numerous, and, as I had noticed was the case with this orchard, were unmolested even when dipping within a foot of a Sapsucker. At 11.15 I fired while a Hummer and young Sapsucker were both dipping and and killed the Woodpecker.

At 11.47 I tried again and killed a Sapsucker and male Hummer with the same charge. At 12.12 a female Hummer came and dipped for forty seconds. At 12.27 I shot another young Sapsucker and at 12.34 a fourth. As I left the orchard a female Hummer was dipping.

On August 10 I spent from 5.30 P. M. until 6.30 at Orchard No. 4. A young Sapsucker and Hummer were in the drilled tree during the entire hour. Although I climbed into the tree to put maple syrup in the cup, the Woodpecker did not leave the branches. Neither bird took any syrup.

On Aug. 13 I reached Orchard No. 2 at 6.40 A. M. At 7.09 a Hummer buzzed in my face so near that I was startled and waved her off. At 7.15 a Hummer was dipping in a canoe birch near by. At 7.17 I fired at her but missed. She dipped again at 7.29. At 7.32 I fired again and failed. At 7.37 she was dipping again and then perched near by. She dipped again at 7.45 and 7.49 and I tried a third shot which was successful. At 7.58 a female hummer was dipping in the same spot. At 8.07 I left without having seen a Woodpecker but with the certainty that more than a single pair of Hummers used Orchard No. 2.

On Aug. 14 at 3 P. M. Hummingbirds were using Orchard No. 2 but the supply of sap was diminishing and no Woodpeckers were to be seen. I shot away a small limb which I noticed the Humming birds perched upon, and a few moments later one returned and flew in zigzag lines near the spot, searching for the missing twig. The same or another bird repeated the search a few minutes later. At 4 P. M. I reached Orchard No. 1 which seemed deserted, nothing coming during an hour and a half. Great streams of frothy sap extended down the bark to the ground and formed a moist spot on the leaves and mould. The trees smelled sour and the lower sap tasted sour. I climbed to the

drills. The upper holes were blowing bubbles of sap, and a slow current was flowing from them, readily visible to the eye. Many kinds of insects were upon the trunk, including ants, common house flies, and hornets. One of the last named stung me without other provocation than my presence, and I descended rapidly from the tree. By a mark made on July 23 I was able to determine that in three weeks the drills in this red maple had been carried eight inches up its trunk.

On Sept. 5 I paid a final visit, for the season, to Orchard No. 1. There were no birds present between 2.30 and 3 P. M. But little sap was flowing. The tree looked in better condition than in July or August.

Great numbers of hornets were in control of the tree. A few butterflies hovered near, but were driven away by the quarrelsome hornets.

On May 1, 1891, I took advantage of a brief trip to Chocorua to visit Orchard No. 1. The Sapsuckers were there and had evidently been at work several days. The red maple, their principal tree, was covered with flowers above the belt of drills, and with newly opened leaves on its lower limbs. The female was dipping at a series of new drills which had been opened two feet above the old belt. Forty-three holes had been cut on the trunk and nearly as many more on several adjoining limbs. Sap was flowing from the upper holes only, and not in abundance. It was slightly sweet. The male came to the tree once during my stay of half an hour, but he spent most of his time on a poplar a few rods distant, where he was digging his family mansion. The poplar was a vigorous tree, about forty feet in height. The hole was on the southeast side of the trunk a little more than twenty feet from the ground. It seemed to be already four or five inches deep. The birds were noisy, especially so when the female went to inspect the male's digging, and when the male came for a moment to the drills. Only two Sapsuckers appeared, and no Hummingbirds were to be seen. There were practically no insects to be found near the drills.

During July and August, 1890, I shot in all eight Sapsuckers at the various orchards. I preserved their stomachs which were well filled with insects. Some of these stomachs were examined by Professor Hagen who wrote to me on Aug. 21st as follows:

"The Woodpecker has hashed his food so fine, that it is beyond

my power or knowledge to determine accurately the composition of this bug-hash."

Mr. Samuel H. Scudder was able to speak with more confidence of the stomachs which I sent to him. Under date of December 19 he said: "The insects in the different stomachs are in all cases almost exclusively composed of the harder chitinous parts of ants. In a cursory examination I find little else, though one or two beetles are represented and No. 4 must have swallowed an entire wasp of the largest size, his head and wings attesting thereto. If the birds were very different in habit, or presumably in food, a comparison of the kinds of ants might lead to the detection of some peculiarities. A number of species are represented."

It is worthy of note that the structure of the tongue of this species is somewhat unlike that of the tongues of other Woodpeckers. In form it is not adapted to use as a dart for securing insects and its fringed edges have suggested to biologists who were not observers of the bird's habits, that sap might, as in the cases of species with similar apparatus, form an important portion of its food. The following extract from a letter written to me by Mr. W. F. Ganong, Instructor in Botany at Harvard University, gives a clear history of the progress of sap in its ascent and descent.

"It is now thought by botanists that the elaborated sap from the leaves is transferred down the stem through the soft bast cells of the inner bark, just outside of the cambium layer. It hence passes to the medullary rays, where it is stored up to last over the winter in the form of starch chiefly. Some of it is stored also in the wood cells of the young wood—but none I believe in the ducts or fibres or main masses of the wood itself. In the latter there is a current of crude sap from the roots flowing up, but I do not think any botanist thinks that the elaborated sap flows down by the same path. Hence if the Woodpecker in July or August penetrates the *wood*, he would get only crude sap from the ordinary wood tissue, but he might get elaborated sap from the medullary rays or some of the smaller wood cells—much more of the former (*i.e.* unelaborated) than of the latter (*i.e.* elaborated), I should say. If he penetrates to the cambium only he would get elaborated sap (which is being transformed into tissue), and if he penetrated the soft inner bark only he certainly would

get elaborated sap flowing downward, and probably that only. If it is elaborated sap he wants, he would do much better to go no further than the inner bark and cambium. The medullary rays are so small in proportion to the size of a Woodpecker's bill and tongue that he would receive but poor wages for his labor in penetrating them. Of course in spring before the leaves are fully out, the sap is very rich as it flows up, both in starchy and albuminoid matters, and *then* it would be worth working for. But as late as July and August, the upward flowing sap, while it contains traces of these nutritious substances, must be very poor in them.

"I never thought of the question before, because I did not know that Woodpeckers bored for sap. I always supposed it was insects and their larvæ they were after."

Summary.—From these observations I draw the following conclusions: that the Yellow-bellied Woodpecker is in the habit for successive years of drilling the canoe birch, red maple, red oak, white ash and probably other trees for the purpose of taking from them the elaborated sap and in some cases parts of the cambium layer; that the birds consume the sap in large quantities for its own sake and not for insect matter which such sap may chance occasionally to contain; that the sap attracts many insects of various species a few of which form a considerable part of the food of this bird, but whose capture does not occupy its time to anything like the extent to which sap drinking occupies it; that different families of these Woodpeckers occupy different 'orchards,' such families consisting of a male, female and from one to four or five young birds; that the 'orchards' consist of several trees usually only a few rods apart and that these trees are regularly and constantly visited from sunrise until long after sunset, not only by the Woodpeckers themselves, but by numerous parasitical Hummingbirds which are sometimes unmolested, but probably quite as often repelled; that the forest trees attacked by them generally die, possibly in the second or third year of use; that the total damage done by them is too insignificant to justify their persecution in well-wooded regions.

A PRELIMINARY LIST OF THE BIRDS OF SAN JOSÉ, COSTA RICA.

BY GEORGE K. CHERRIE.

THE following list will contain the birds found in the immediate vicinity of the city, and principally only such as I have taken myself and are represented in my own collection or that of the Museo Nacional.

Doubtless many more birds will yet be recorded, especially among the migrants, and even among the resident birds, because at a very little greater distance from the city many varieties are found that are not given in the list. At the most, I think the area covered does not exceed a radius of two miles.

The city of San José is located at 9 degrees 56 minutes North Latitude, and 84 degrees 8 minutes West Longitude, at an altitude of about 1135 metres. On the north the city is bounded by the River Torres, and on the south by the River Maria Alguilar.

The seasons are well marked, the rainy season commencing in the latter part of May and lasting until the latter part of November.

About the city the country is rather level, and there is comparatively little timber or brush wood; this being found along the sides of the river. There is considerable open pasture-land, and the remainder of the ground is occupied almost exclusively by coffee plantations. Many of these coffee plantations have jocote, aguacote, anona, and other fruit trees planted here and there. These fruit trees are very productive of bird life, the absence or presence, the appearance and disappearance of many species depending on the supply of fruit.

Bird life generally is far more abundant during the rainy season than during the dry season. At the end of the latter season vegetation is parched and dry. There are no fruits and insect life is not abundant. The breeding season commences with the awakening into life of the insect world and the bursting forth into fruit and flower at the beginning of the rainy season. This is speaking generally, as I believe some few species may be found nesting every month in the year.

Perhaps the greatest number of varieties are found moulting during July, August and September, but, as in the case of nest-

ing, some are moulting at all times and at all seasons. The North American migrants are usually in good plumage, although young birds in immature plumage seem to predominate in point of numbers.

Quite a variety of the North American species that are tolerably common at the time of their arrival from the north, disappear from the vicinity of the city at the close of the rainy season, and at the time of their departure on their return journey north, are only found at lower altitudes where food of all kinds is more abundant.

Of the 162 species included in the San José fauna 89 are North American. Since the publication of my list of North American birds at San José, Costa Rica (Auk, Vol. VII, p. 331), I have added the following:— *Dendroica cærulea*, *Falco columbarius*, *Urubitinga anthracina*, *Myiodynastes luteiventris*.

The entire fauna is composed of 29 Nearctic species, 60 Neogean; 30 autochthonous (of the 39 autochthonous species, 4 are peculiar to Costa Rica), and 34 Neotropical.

The nomenclature and classification here followed is that of Zélédon's list of Costa Rican birds (Anales del Museo Nacional de Costa Rica, Vol. I, 1887).

The list contains some notes on habits and nidification, and also descriptions of the plumage of young birds.

1. *Catharus melpomene*. The Central American Thrush-Robin, known here under the native name of 'Inglicito,' little Englishman, is quite common about the city, but owing to its very shy and retiring disposition, it is known to many by its song only. The song is heard occasionally throughout the entire year, but at its best, and almost continuously during the months of February, March and April, — just before and at the beginning of the breeding season. To pour forth their melody they usually choose a seat at the side of and well toward the top of one of the thick hedge fences surrounding the fields. There, with head thrown well back and wings drooping they will trill for hours, if not disturbed, but at the first approach of danger the singer is gone, — down through the hedge and away on the other side, where in a short time he will be heard as joyously as ever.

After the nesting season has well begun they are less often seen and seldom heard. Often when collecting I have heard a slight rustling of leaves at my side, when if I stopped and stooped down and examined closely the hedge row, I would probably see an 'Inglicito' perched within a few inches of the ground, sitting perfectly quiet watching me, or it would flit quietly and quickly from that point out of sight, all the time keeping well concealed from view.

They feed I believe entirely on the ground, scratching among the dead leaves for beetles, grubs, etc.

Nesting commences the latter part of April and lasts until the latter part of July, and even as late as August 20 I noted one feeding a young Cowbird (*Calothrus robustus*), — the Cowbird apparently full grown and considerably larger than its foster mother.

I have only had opportunity to examine two nests and sets of eggs, although from the fact that I have secured many young birds just from the nest I am sure they breed quite abundantly. Both sets of eggs were taken April 28, 1889. The first (No. 553, Geo. K. Cherrie Collection) was placed about six feet from the ground, in a coffee tree that stood some 18 feet from the river bank. It was constructed of green moss, evidently taken from some very damp place, a few large twigs, decaying half rotten leaves from the river bottom, and a little soft dry grass. It was lined with rootlets. The nest although not well concealed by leaves was not readily noticeable owing to the green moss used in the construction.

The nest contained two eggs, but one was unfortunately broken. The remaining egg is slightly glossy, pea green in color, speckled all over, very densely at the larger end, with cinnamon. It measured .92 X .67.

The second nest (No. 544, Geo. K. Cherrie Collection) was situated in low bushes on the river bank, about three feet from the ground, admirably hidden by leaves. It is hardly as large as No. 553; there are fewer rotten leaves, less green moss, and more soft dry grass used in the construction. It has the same sort of lining of rootlets.

The eggs, two in number, are ovate in form, ground color pea-green, thickly speckled with spots varying from pale cinnamon to Prout's brown. The eggs measure .92 X .68, and .92 X .68.

The female while sitting on the eggs will allow no one to approach very near before leaving the nest, finally slipping off into the brush and out of sight without uttering a note.

In the 'Biologia Centrali-Americana' the eggs are stated to be "white thickly marked with rufous red,"—decidedly different from the eggs I have taken.

Below I will give a description of two young birds brought to the Museum, July 30, 1890, birds evidently just about ready to leave the nest. I endeavored to keep the birds alive but they died the next morning. They may be described as follows: Above dusky dark brown, darkest on the head, where there are no markings, and lightest on the rump where there is a decided cinnamon shading; feathers of back and scapulars with apical, tawny olive shaft streaks; middle and lesser wing-coverts marked the same way, but terminal spots larger; primaries dusky faintly edged with raw umber. Greater coverts and secondaries broadly margined on outer webs with a light mars-brown. Below, throat and upper breast spotted, the tips of the feathers all being dusky, then crossed by a broad buffy whitish band, the bases of all the feathers dusky; sides similar but darker; belly soiled buffy whitish; under-tail coverts ochraceous (at this age

reaching to the end of the tail). Eye dark, bill black, yellowish at the rectus only; legs and feet yellowish; front of tarsus and tops of the toes shaded with dusky.

2. *Turdus fuscescens.*

3. *Turdus ustulatus swainsonii.* — No notes have been added on these two species since the publication of the author's list of North American birds at San José. (See Auk, VII, p. .)

4. *Merula grayi.* — Gray's Thrush, or the 'Yigüirro' of the Costa Ricans, is one of the most abundant resident birds about the city. It breeds abundantly, the nesting season commencing about April 1, and lasting until nearly the middle of August. I have secured young birds from the nest as early as June 1. Two or three broods seem to be reared each season. Just previous to the beginning of and during the early weeks of the nesting season the Yigüirro is in full song. With the exception of this short period it has seemed to me to be rather a quiet bird, although gregarious in its habits. During the rainy season the chief food is the fruit of the species of wild figs (*Ficus*), and while they are frequently found in considerable numbers in these trees they are not noisy, and often my first intimation of their presence has been on hearing their sudden precipitous flight through the leaves and out of the tree. At such times they utter a sharp, rather disagreeable note.

A Mr. Echandia tells me that one he has in a cage frequently sings late at night, especially if disturbed or if the mosquitoes are very troublesome.

At all seasons Gray's Thrush is much sought after as a game bird, consequently they are decidedly shy.

The nest and eggs of this species vary considerably as will be shown by the description of three nests and sets of eggs in the author's collection. No. 1579, San José, June 24, 1890; three slightly incubated eggs. The eggs are a pale glaucous green, speckled and spotted all over with shades of brown between burnt umber and pale chestnut. On the larger end the ground color is almost entirely concealed. The larger spots are almost all irregular in form but present an approach to an ellipse. The eggs are ovate slightly elongated, and measure as follows: — 1.22 X .80; 1.20 X .81; and 1.20 X .78.

No. 1580, San José, July 1, 1890; two eggs and nest. The nest was placed in a small tree, about ten feet from the ground. It is composed outwardly of half rotten grass stems and leaves mixed with mud; the lining is rather coarse rootlets. Outside it measures 5.50 by 4.50 by 3 deep; inside 3.25 by 3.75 by 1.75 deep.

The eggs are rather under average size and one is much smaller than the other. The larger is ovate and the smaller short ovate. In the larger incubation had somewhat advanced while the smaller was perfectly fresh. The ground color is glaucous green; the markings consist of small dots of several shades of brown, pale chestnut predominating. The dots are aggregated mostly about the larger end, but the ground color is nowhere concealed.

No. 1581, San José, June 25, 1890; two eggs and nest. The nest was

about five feet from the ground, in a shrub growing by the river bank, and was constructed externally entirely of rootlets and dry grass stems, only a very little mud being mixed with them. The measurements taken from the nest are, 5.50 by 4, 2.50 deep outside. Inside 3.25 by 3, 1.75 deep.

The two eggs measure 1.12×82 and 1.13×83 . On the last the spots of brown are larger and more scattered, showing more of the pale glaucous green brown. On the first the spots are smaller and thicker, the ground color darker and about the larger end almost completely hidden.

5. *Thryophilus modestus*. — Of the two Wrens found in San José, the 'Chinchirigüi' is by far the most common and decidedly the noisiest, inhabiting the hedge rows where their noisy, suspicious chatter and restless motions are sure to attract the attention of the passer by, although a glimpse will be seen here and there of the bird. The song is loud, clear and piercing. The common name is derived from a supposed imitation of the notes of the song. It is pronounced *cheen-che-ree-gûe*, with a strong accent on the last syllable. These notes are repeated over and over very rapidly. There seems to be no particular time or place for singing; they are always ready.

The nesting season lasts from early April to late in August. I have taken young birds just from the nest by May 5, and as late as August 25. I have searched diligently for the nest of this species, but thus far have not succeeded in finding one.

Young birds just beginning to fly are intermediate in coloration between adult *T. zeledoni*, and *T. modestus*. Above, brownish slate like *zeledoni*, but having a shading of umber brown instead of olive. Below breast and belly white; sides, flanks and crissum ochraceous buff. In the adult bird the eye is chestnut; in the young, slate gray; feet and tarsi plumbeous. As the bird grows older, the ochraceous deepens and extends forward much further than in the adult bird, even encroaching on the sides of the breast; centre of the breast and belly ochraceous buff.

The parent birds and young remain in company until the young are fully grown. I have frequently come upon these family parties and secured them all. The two old birds will make a great noise and try in every way to attract attention. But the young crouch close to their perch and will scarcely stir even when one is within three or four feet of them, searching for them.

6. *Troglodytes intermedius*. — The Central American House Wren, or 'Zoterré' of the natives, while not nearly as common or as noisy as the last is better known, not being so shy, besides having a habit of nesting in small boxes prepared for them in the manner of the common House Wren *T. aëdon*. Its habits in general are very like those of the House Wren, seeming, however, to prefer being close to the ground at all times. The song, however, is not apparently as strong as in that species.

Nesting begins in the latter part of January or early in February, as I have taken young birds fully grown by February 15, and birds just from the nest as late as June 23. While I have not taken any eggs myself I have noted the birds constructing their nests in deserted Woodpecker holes and

other convenient places, usually from three to eight feet from the ground. On June 16, 1889, I observed a pair carrying nesting material into the brain cavity of an ox skull. The skull was in the branches of a small tree about four feet from the ground, the Wren entered at the foramen magnum. At another time I observed a pair nesting in a hole in the ground in the bank of a small creek.

A nest and set of three eggs collected by Señor Don Anastasio Alfaro (No. 30, Museo Nacional, El Arroyo Allejuela, May 20 1889) was placed in the walls of that gentleman's house. The nest was constructed similarly to a nest of *T. aëdon*, there being first a great bulk of rather coarse dry twigs; inside of this a lining of soft grass stems and horse hair, finished with soft chicken feathers and three pieces of cast off snake skin. The eggs are short, ovate, pinkish white in color thickly speckled with bright chocolate brown, the speckling thickest near the larger end. The eggs measure .65 X .52; .65 X .52, and 63. X .52. Señor Alfaro states that this bird was employed fifteen days in building the nest and depositing the three eggs. The bird was very confiding and would perch at the mouth of the nest and sing, while he (Alfaro) was standing within a yard of the nest.

A second nest and eggs taken by Señor Alfaro (No. 33, Museo Nacional, Tambor Alejuela, May 20, 1888) contained five eggs, one of which was broken. This nest, like the last, is lined with soft feathers and a few bits of cast off snake skin. Señor Alfaro assures me that he has examined many nests of this species and that all contain bits of snake skin,—rather a peculiar feature.

The eggs are pinkish white, thickly speckled with bright chocolate. In three of them the distribution of the spots is pretty uniform, while in the other they are aggregated in a band about the larger end, so as to conceal the ground color. They are short ovate and measure .70 X .54; .72 X .53; .68 X .53, and .69 X .53.

In a series of 22 examples of this species now before me, representing different ages and seasons, I find considerable variation in color.

Male (No. 37), above reddish brown (sepia), a little brighter on rump and upper tail-coverts, very obsoletely banded with darker. Wings and tail dusky, banded with black and the color of the back, the black bands being the narrower. Upper tail-coverts distinctly banded with black. Feathers of the rump with concealed subterminal black bands preceded by a white spot. An obscure line over the eye, lores, and a ring about the eye a brownish buff. Auriculars buff, edged with the color of the back, Below, throat and middle of the belly brownish buff; throat paler. Sides Isabella color; flanks darker, indistinctly barred with dusky; crissum and under tail-coverts buffish white barred with blackish.

Female (No. 3151), darker above than the male. The concealed subterminal black bands and white spots on the feathers of the rump are almost obsolete. The light bands on the wing are not nearly as dark as the back. Below similar to the male.

Young birds are much darker. A young male (No. 645, Geo. K. Cherrrie Collection) is dark bistre brown, wings and tail dusky blackish. The obsolete banding with black on the back is more apparent. The bands on

the upper tail-coverts are entirely obsolete and the brown bands on the wings are much paler than the color of the back. Wing-coverts distinctly banded with black. Concealed markings of rump feathers almost obsolete. Below slightly darker than adult with wavy lines across the throat, breast, and belly, produced by a very narrow terminal band to the feathers. Flanks and crissum dark Isabella color without bands. Female similar.

As the birds grow older the wavy lines below grow fainter. The crissum becomes lighter and is banded with dusky. The dark banding on the wing-coverts grows fainter while that on the upper tail-coverts becomes distinct.

No. 4577 and No. 4579 have the flanks very distinctly barred with dusky, the brown bands on the wings are much paler than the brown of the back, and are but little wider than the black bands. The wing-coverts are distinctly barred.

Below I present a table of measurements of the specimens in the collection of the Museo Nacional, together with four from my own private collection.

MEASUREMENTS OF *T. INTERMEDIUS*.

| No. de Mus. Nac. | Collector's No. | Collector. | Locality. | When Collected. | Wing. | Tail. | Tail Feathers, Exposed. | Culmen. | Bill from Nostril. | Tarsus. |
|------------------|-----------------|------------------|---------------------|-----------------|-------|-------|-------------------------|---------|--------------------|---------|
| 2194 | | A. Alfaro, | San José, | Nov. 5, '87 | 2.00 | 1.69 | 1.41 | .49 | .37 | .74 |
| 2461 | | | Naranjo de Cartago, | June , '89 | 1.97 | 1.66 | 1.42 | .47 | .37 | .72 |
| 2735 | | G. K. Cherrie, | San José, | Feb. 24, '89 | 1.98 | 1.65 | 1.40 | .49 | .37 | .68 |
| 2736 | | " | " | Feb. 24, '89 | 1.95 | 1.52 | 1.28 | .40 | .30 | .72 |
| 3070 | | A. Alfaro, | Alajuela, | July 8, '89 | 2.11 | 1.73 | 1.54 | .50 | .37 | .71 |
| 3151 | | " | " | July 25, '89 | 2.03 | 1.73 | 1.48 | .51 | .40 | .71 |
| 3152 | | " | " | July 22, '89 | 1.94 | 1.42 | 1.22 | .52 | .40 | .70 |
| 3531 | | " | " | July 31, '89 | 1.68 | .98 | .68 | .31 | .24 | .70 |
| 4575 | 542 | C. F. Underwood, | San José, | Dec. 14, '89 | 1.87 | 1.62 | 1.34 | .50 | .38 | .65 |
| 4576 | 534 | " | " | Dec. 4, '89 | 2.00 | 1.55 | 1.33 | .50 | .40 | .70 |
| 4577 | 576 | " | " | Dec. 21, '89 | 2.13 | 1.74 | 1.50 | .51 | .41 | .72 |
| 4578 | 1095 | " | Juan Viñas, | May 4, '90 | 1.96 | 1.65 | 1.40 | .41 | .32 | .68 |
| 4579 | 1092 | " | " | May 4, '90 | 2.08 | 1.67 | 1.43 | .50 | .40 | .70 |
| 4580 | 1094 | " | " | May 4, '90 | 1.95 | 1.56 | 1.21 | .50 | .38 | .69 |
| 4581 | 1084 | " | " | May 3, '90 | 2.00 | 1.70 | 1.45 | .48 | .40 | .72 |
| 4934 | | A. Alfaro, | Alajuela, | Oct. 3, '89 | 1.90 | 1.43 | 1.30 | .50 | .40 | .68 |
| 4971 | | " | San José, | June 15, '90 | 2.00 | 1.73 | 1.47 | .49 | .38 | .69 |
| 5188 | | G. K. Cherrie, | " | Sept. 10, '90 | 1.92 | 1.66 | 1.30 | .49 | .38 | .72 |
| | 645 | " | " | June 7, '89 | 1.92 | 1.45 | 1.20 | .44 | .32 | .71 |
| | 668 | " | " | June 23, '89 | 1.88 | 1.73 | 1.38 | .43 | .32 | .70 |
| | 727 | " | La Sabanita, | | | | | | | |
| | | | Alajuela, | July 15, '89 | 1.92 | 1.62 | 1.41 | .50 | .40 | .72 |
| | 762 | " | San José, | Aug. 5, '89 | 1.94 | 1.65 | 1.35 | .50 | .39 | .70 |

7. *Mniotilta varia*. — The first arrival this year was a young male on August 20, the same date as the first arrival in 1889; the second was noted September 3.

In a series of 25 Black-and-white Warblers before me, almost all are birds of the year. There is not one in fully adult plumage and many are decidedly buffy on crissum and sides.

8. *Protonotaria citrea*.—No fall migrants were noted.

9. *Helminthophila peregrina*. Recorded the first this fall, October 20. In a series of 15 Tennessee Warblers, taken from the beginning of September to the beginning of March, there is not one that is not more or less strongly tinged with greenish yellow, very different from the breeding bird found in the United States.

10. *Helminthophila chrysoptera*.—The first noted this year, a female, taken October 2, is a rather abnormal bird, being as brightly colored as any spring male. Birds taken here have usually more or less olive green shading on the back.

11. *Helmitherus vermivorus*.—November 23, 1890, I took a fine male specimen, the first and only Worm-eating Warbler I have taken in Costa Rica.

12. *Dendroica virens*.—The Black-throated Green Warbler may, I think, be considered as rather a rare bird in Costa Rica, there being only three Costa Rican examples in the Museo Nacional. These three, although the sex is not indicated on the labels, are evidently females, having the throat yellow and the black of the breast with whitish tips to the feathers. I have not myself met with this bird.

13. *Dendroica coronata*.—There are only two Yellow-rumped Warblers in the Museum collection. A male taken Feb. 15, 1889, is similar to an adult female from the vicinity of Washington, D. C., but has a triangular ashy blue patch with black streaks in the centre of the back. There are a few black feathers in the auriculars, and a few scattered in the sides of the crown. Below the yellow of the sides of the breast is very pale. The white throat is tinged with light buffy brownish. There are only a few black feathers in the breast (these are tipped with white), and a few with black shaft streaks.

14. *Dendroica blackburniæ*.—First arrivals were noted August 17, 1890, and the second August 20, from which time they were common until the first of October, when they were very abundant and remained so until the 7th, when all disappeared. The first arrivals were nearly a month earlier than in the fall of 1889.

In a series of 50 Blackburnian Warblers taken chiefly in the vicinity of San José there is not one in adult plumage. Perhaps the brightest bird in the collection is a female, taken by the author October 3, 1890, with throat and breast rich cadmium orange, but the white wing-patch is replaced by the two wing-bars of the young bird, and there is considerable grayish brown in the upper plumage. While there are a few males and females like the one described above, the bulk are very much paler, ranging from the bright cadmium orange to a pale yellowish buff on the throat and the breast, with the crown patch almost obsolete, the back and streaks on the sides dusky brownish.

15. *Dendroica pennsylvanica*.—In a series of 40 Chestnut-sided War-

blers now before me, 11 show the chestnut stripe on the sides; in 6 of these, however, it is only faintly indicated. One of the 40 has the yellow crown of the adult; all have the wing-bands strongly tinged with sulphur yellow, and almost all are bright olive green above.

The first arrival for the fall of 1890 was September 21.

16. *Dendroica aestiva*.—I have before me 32 males and 15 female Yellow Warblers, including specimens from both the Atlantic and Pacific sides of the country, but the majority are from the vicinity of San José. I believe all are true *aestiva*, although the difference between birds from the extremes of the series is very great. Eight of the 32 males have the chest and sides more or less streaked with chestnut. From a bird thickly marked with rather broad reddish chestnut streaks there is a gradual variation, the streaks becoming fewer, narrower, and lighter until just discernible. The yellow of the under parts also grows appreciably paler; only 4 of the 18 show faint chestnut streaking on the back. Above yellowish olive green; some of those that are brighter colored below have the crown more or less ochraceous orange, but this color gradually darkens into the yellowish olive green of the back. In the remaining 14 males, those in which the chestnut streaks are almost entirely obsolete, the yellow of the underparts grows fainter and varies from gamboge yellow to clear straw yellow. Above there is no sign of streaks and the yellowish color gradually disappears giving place to dusky grayish, until the last which I would describe as dusky grayish olive green.

The 15 female examples show the same variations as noted in the males, only the brightest female is not as bright as the brightest male, and at the other end of the series they are duller above and somewhat paler below.

The first arrivals the present year were noted August 24.

(To be continued.)

THE SCOTERS (*OIDEMIA AMERICANA*, *O. DEGLANDI* AND *O. PERSPICILLATA*) IN NEW ENGLAND.

BY GEORGE H. MACKAY.

My experience on the coast of New England has shown that observations covering a series of years are necessary in order to arrive at any important conclusions respecting the habits and movements of the water birds during their passage along this

coast, as the amount of information collected each year is small and the observations of different years often contradictory, owing to the varying conditions of the weather which govern in a large measure the movements of these birds during migration. In order to obtain a knowledge of the waterfowl, investigation must be prosecuted during the colder months, when inclement weather is likely to prevail; besides one must be a good boatman; hence the conditions for the observations as a rule are not so favorable nor so agreeable as the prosecution of similar investigations respecting land birds.

It is for these reasons that I venture to present in the following pages the results of such observations as I have been able to make, concerning the habits, feeding grounds, and migration of the three species (known under the common name of Coot) designated in the above title, with the hope that they may prove of interest.

These Scoters are the most numerous of all the sea fowl which frequent the New England coast, collecting in greater or less numbers wherever their favorite food can be procured, — the black mussel (*Modiola modiolus*), small sea clams (*Spisula solidissima*), scallops (*Pecten concentricus*), and short razor-shells (*Siliqua costata*), about an inch to an inch and a half long, which they obtain by diving. As an indication of how large a scallop these Ducks can swallow, I may mention one taken from the throat of an adult male White-winged Scoter, which was about the size of a silver dollar; it cut the skin of the neck when the bird struck the beach after being shot. Mussels measuring two and half inches by one inch have been taken from them; but usually they select sea clams and scallops varying in size from a five cent nickel piece to a quarter of a dollar. They can feed in about forty feet of water, but prefer less than half of that depth. As these mussels are frequently difficult to detach, and the sea clam lives imbedded endwise in sand at the bottom with only about half an inch above the sand, the birds are not always successful in obtaining them, it requiring considerable effort on their part to pull the mussels off, or to drag out the clams. Eight or ten of these constitute a meal, but the number varies according to the size. I have heard of a mussel closing on a Scoter's tongue, which was nearly severed at the time the bird was shot (Muskeget Island, about 1854). The fisherman frequently discover beds of shell fish (scallops) by noticing where these birds con-

gregate to feed. In the shoal waters adjacent to Cape Cod, Nantucket, and Marthas Vineyard, these mollusks are particularly abundant, and consequently we find more of the Scoters in those localities than on any other part of the coast or perhaps than on all the rest of the coast combined. The birds living north of Chatham, Cape Cod, are found in widely scattered groups. Among the places frequented by the larger bodies further south are Point Kill Pond Bar, three miles off Dennis; the flats off Chatham, Mass. (twelve feet of water, and sea clams); Cape Cod, Mass.; Nantucket Shoals; Horse Shoe Shoal; Muskeget Channel; Vineyard Sound off Gay Head; and the whole north shore of Nantucket Island, about two or three miles out from the island. Most of these places being inaccessible to ordinary sportsmen, the birds can live undisturbed during the late autumn, winter, and spring months; undoubtedly returning year after year to these same waters, which appear to have become their winter home.

Where there are large ponds adjacent to the coast, separated from the ocean by a strip of beach, all three of the Scoters will at times frequent them to feed, and will collect in considerable numbers if the supply of food is abundant; in which case they are very unwilling to leave such ponds, and, although much harassed by being shot at and driven out, continue to return until many are killed. An instance of this kind occurred the first of November, 1890, when some four hundred Scoters collected in the Hummuck Pond on Nantucket Island; they were composed entirely of the *young* of the Surf and White-winged Scoters, only one American (a female) being obtained out of about fifty birds shot in one day (Nov. 3) by a friend and myself. I shot three American Scoters on Nov. 2 in the same pond.

As early as the 10th of August White-winged Scoters begin to arrive on this coast from the North, a good many of which have their breast feathers thin and worn off. The young White-wings do not arrive much before the 8th to the 14th of October. A few of the *old* American Scoters appear early in September, a large movement usually taking place from the 17th to the 25th of September; a few of the young birds arrive about the eighth of October. The old birds of the Surf Scoter appear about the middle of September, with a very large movement about the 20th, accor-

ding to the weather, the young birds making their appearance the last of September or first of October. I have known a considerable flight to occur on the last day of September, the wind all day being very fresh from the southwest, which deflected them in towards the land; such an early movement is, however, unusual. An easterly storm about the middle of August is likely to bring them along, the wind from this direction being particularly favorable for migration; if, on the other hand, the weather is mild and warm, it is not usual to see them so early.

From this time on they continue to pass along the coast until near the end of December, the main flight coming between the 8th and 20th of October, depending upon the weather, when the migration appears to be at an end. During such migration they are estimated to fly at a rate of about one hundred miles an hour, but this rate is also governed by the weather. The greater part of these Scoters pass around Cape Cod, as I have never heard of, nor seen, any of the immense bodies of 'bedded' fowl north or east of it as occur south and west of the Cape; probably because they are unable to find either the security or profusion of food north of it, that they can obtain in the waters to the south. They therefore congregate here in large numbers. On March 18, 1875, I saw on a return shooting trip from the island of Muskeget to Nantucket a body of Scoters, comprising the three varieties, which my three companions and myself estimated to contain twenty five thousand birds.

In these shallow waters the tide runs rapidly over the shoal ground and sweeps the Scoters away from where they wish to feed, thus necessitating their flying back again to it; consequently there is at such times a continual movement among them as they are feeding. When wounded and closely pursued, they will frequently dive to the bottom (always using their wings as well as feet at such times in swimming under water) and retain hold of the rock-weed with the bill until drowned, preferring thus to die than to come to the surface to be captured. As an instance of this, I may mention that on one occasion I shot a Scoter when the water was so still that there was not even a ripple on its surface; after pursuing the bird for some time I drove it near the shore, when it dove and did not reappear. I knew it must have gone to the bottom, as I had seen the same thing repeatedly before. As the occasion was a favorable one for investigation, the water being

clear and not more than twelve or fifteen feet in depth, I rowed along carefully, looking continually into the water near the spot where the bird was last seen. My search was at last successful, for on getting directly over where the bird was I could look down and distinctly see it holding on to the rockweed at the bottom with its bill. After observing it for a time I took one of my oars, and aiming it at the bird sent it down. I soon dislodged it, still alive, and captured it. I have often seen these birds, when wounded and hard pressed, dive where the water was forty to fifty feet deep, and not come to the surface again. I therefore feel much confidence in stating that it is no uncommon occurrence for them under such circumstances to prefer death by drowning to capture. This they accomplish by seizing hold of the rockweed at the bottom, holding on even after life has become extinct. I have also seen all three species when wounded dive from the air, entering the water without any splash. All are expert divers, it requiring considerable experience to retrieve them when wounded.

I have noticed during the spring migration northward in April that frequently the larger flocks of the Surf Scoter are led by an old drake. That the selection of such a leader is a wise precaution has frequently been brought to my notice, for on first perceiving such a flock coming towards me in the distance, they would be flying close to the water; as they neared the line of boats, although still a considerable distance away, the old drake would become suspicious and commence to rise higher and higher, the flock following him, until the line of boats is passed, when the flock again descends to the water. When over the boats shots are frequently fired up at them, but so well has the distance been calculated that it is seldom a bird is shot from the flock.

While each species, during spring migration, prefers to keep separate from the others, I have at times noticed flocks which had a few stragglers of the other kinds mixed with them, and have seen stray birds join flocks not of their own kind. They, however, soon appeared ill at ease, frequently leaving the flock before passing from view.

All three varieties when flying directly overhead at an elevation of about one hundred and thirty yards, can be called or whistled (by blowing through the fingers placed in the mouth) down to within ten or fifteen yards of the water, though *never* into it; but it requires one whose eyes and hands work in most perfect accord

to catch them with a charge of shot during such a headlong, zig-zag rush. I explain this action on their part by the supposition that at first they mistake the sound for the noise of a hawk's wings and seek the water for safety. I have seen the same result produced by a rifle ball passing through or near a flock flying high in the air. Either of the Scoters, when at considerable distance, can be attracted towards the decoys by shaking a jacket or hat at intervals, which, when their attention has been secured, should be stopped; for once their eyes have become fixed on the decoys, they will usually come to them, if flying low down near to the water.

My experience shows that all the Scoters are unusually silent, and seem to depend entirely on their sight, in discovering their companions. The American Scoter makes a musical whistle of one prolonged note, and it can frequently be called to the decoys by imitating the note. I have rarely heard the Surf Scoter make any sound, and then only a low guttural croak, like the clucking of a hen; they are said to utter also a low whistle. The White-winged Scoter, so far as I know, is perfectly silent, although I have heard that they make a low quack, like the note of the Blue-winged Teal; yet they can be called to the decoys in the spring by making a loud purring sound, like the call of the Brant.

In the spring mating begins before the northward migration commences, as I have taken eggs from females, between the 15th and 25th of April, which varied in size from a cherry stone to a robin's egg. During this period the duck when flying is always closely followed by the drake, and wherever she goes, he follows; if she is shot, he continues to return to the spot until also killed. I have often on firing at a flock shot out a female; the moment she commences to fall, she is followed by her mate; he remains with her, or flies off a short distance only to return again and again until killed, regardless of previous shots fired at him. I have never seen any such devotion on the part of the female; she always uses the utmost speed in flying away from the spot, and never returns to it.

In regard to the abundance of each kind of Scoter, it is difficult to judge, but I lean to the opinion that the Surf Scoter is the most numerous; next, the White-winged, and lastly the American. I think there is little difference as to the numbers now, and formerly; but during the southern migration, unless it

is thick and stormy weather, they pass farther out from land than formerly, owing to their being shot at. When migrating they fly very much higher in calm than during windy weather, and if there is any difference in the elevation of their flights at such time, I should say the Surf Scoter flew the highest (with the exception of those White-winged Scoters which migrate *west* in May).

I do not think it is generally known, or has been before stated, though I have known the fact for twenty years, that a very large number of the *White-winged* Scoters which make their winter home in the waters adjacent to Cape Cod, Nantucket, and Muskeget Islands regularly make a migration in May to the *westward* as far as Noank, Connecticut, where I have ascertained they are found during the latter part of May. They fly in the evening and at night, very high up, in a due *northwest direction*, usually passing in moderate muggy weather, making a low guttural sound at intervals. As I cannot obtain any data of their occurring west of this point on Long Island Sound, I venture to suggest that they pass high up over the state of Connecticut during the *night* and reach their breeding grounds at the north by the Connecticut River and Lake Champlain or Hudson River routes. This movement is a peculiar one, inasmuch as it takes place about the middle of May, and after the greater portion of the migration of this group has passed by, as also in ignoring the coast route accepted by all the rest. My attention was first directed to this unusual movement during the spring of 1870, while shooting at West Island, off Seconnet Point, Rhode Island, and it has occurred regularly every year since that date, as was undoubtedly the case earlier. These birds are apparently all adults, and do not seem to heed the regular migration to the eastward of many of their own kind, which has no effect in hastening their departure for the north. When the time arrives for them to set out on their migration, and the meteorological conditions are favorable—for it must be clear at the westward—they always start late in the afternoon, from *three to five* o'clock, and continue the flight during the night, passing by Marthas Vineyard, Woods Holl, Seconnet Point, Point Judith, and Watch Hill, quite a number frequently going over the land near the coast, they being very erratic at such times in their movements. This flight lasts for from three to seven days, according to the state of the weather. I have never

heard of their starting before the 7th of May, which is unusually early; the customary time being from the 12th to the 15th, and the latest the 25th. They usually fly at a considerable altitude, say from two hundred to three hundred yards, fully two thirds of them being too high to shoot. They prefer to start during calm warm weather, with light southerly, southeasterly, or easterly winds; though they will occasionally fly when the wind is strong. They never fly in the forenoon, but when once they have determined to migrate, they leave in large flocks, some of which number from five to six hundred birds, while as many as ten thousand have been estimated as passing in a single day. I have never heard of, or seen any similar flight to the *eastward* after this *western* flight has taken place. A few of the other two Scoters are seen with the White-wings during this western movement. No perceptible difference is noted in their numbers from year to year, and I have never heard of a year when such a flight as above described did *not* take place.

The cause of this late and unusual movement is undoubtedly the breaking up of the large bodies of White-winged Scoters which have been living all winter between Cape Cod and Muskeget and Marthas Vineyard Islands; and I feel moderately certain that these birds return year after year to their old haunts, it having become after so long an occupation as much their winter home as the one at the North has their summer home. They consequently prolong their stay until the last moment. As before stated, they are apparently all old birds, exceedingly large and heavy; they are so densely feathered, powerful, and tenacious of life, that at the long distances one has to shoot at them, the shot will not penetrate unless they are hit in the head or neck. To recover a wing-broken one, if otherwise uninjured, is most difficult, in which respect they stand on a parity with the Loons and Eiders.

Towards the latter part of May there is a movement of Surf and American Scoters to the eastward, the flight being up Buzzards Bay and crossing high up over the land to Cape Cod Bay. There is also a movement south, during the latter part of October, over Barnstable County near Centerville, Mass., from Cape Cod Bay to Vineyard Sound.

I am informed on very good authority that when the *western* migration of the White-winged Scoter is taking place in May,

many Surf Scoters pass *east* through Vineyard Sound, say three or four flocks of from fifty to seventy-five birds each during an hour. On their way north in April, the Surf and American Scoters usually make their appearance before the White-wings. The migration of the Scoters is so mixed that I have rarely separated the entries in my earlier notes (much to my regret now). I can therefore only give data in most instances of the combined migration. In order that some idea may be formed as to the time when these defined movements occur, I copy the following from my notes. My place of observation in the spring was Seconnet Point, Rhode Island; in the autumn at Straitsmouth Island, Cape Ann, Mass.

1862, Oct. 11. Large flight of Scoters going south.

1862, Oct. 12. Quite a movement going south.

1862, Oct. 14. An enormous flight of Scoters going south; wind east, blowing hard; shot a great many, lost some, but saved fifty and one Canada Goose.

1862, Oct. 15. A flight going south.

1865, Oct. 13. Large flight going south; blowing very hard from the south.

1866, Sept. 25. A small number going south; wind S. E. with fog and rain.

1866, Sept. 29. Quite a number of *old* Scoters flying south, far out from shore; weather very calm.

1866, Oct. 1. A small movement of *old* American and Surf Scoters going south; wind blowing hard before daylight, but moderated at that time.

1866, Oct. 2. Shot Blue-bill Widgeon in company with Scoters.

1866, Oct. 6. Some Scoters flying; wind N. W., cold.

1866, Oct. 9. Quite a flight of Scoters in the morning; blowing hard from the east.

1866, Oct. 10. A large flight going south with wind east, moderate; mostly White-wings; first flight of them seen this year. Birds flying high.

1866, Oct. 11. The Scoters all flying high again today, weather very moderate, wind southeast. Scarcely any birds after 10 A.M.

1867, Oct. 8. Considerable flight of White-wings going south; wind northwest in the morning; died away, and went around the compass to west about noon. Two Red-head Ducks (*Aythya americana*) shot today.

1869, April 25-26. Quite a movement to the eastward, mostly White-wings and Surf Scoters; also a few American Scoters.

1870, April 26. Large flight of the three varieties of Scoters eastward; the best day this spring; wind S. W., moderate, warm, fine weather.

1875, April 24-27. A flight towards the eastward, wind S. W., moderate.

1877, April 17. An *enormous* flight to the eastward; wind S. E., raining and blowing hard.

1878, April 10. First flight of Scoters to the eastward. April 14-16. Wind northwest in the morning, calm in the afternoon. A good many Scoters flew wide off shore. Wind fresh N. and N. W., later S. W. light. On the 16th wind N. E. light.

1878, April 17. A *great* many Scoters going east, wind light N. E. Birds all flew during morning, none in afternoon.

1878, April 19-20. A *great flight*, mostly Surf and American Scoters, wind S. W.—on the 20th wind light S. E. Birds all flying to the eastward—fine weather.

1878, April 30. Quite a movement, wind N. E. with rain.

1879, April 20-21. Previous week very stormy, with wind and *snow*, it cleared on the 20th and considerable many Scoters flew, a large share of which were from the eastward. No flight towards the east has as yet taken place; the season is over two weeks later than last year.

1879, April 22. Many Scoters; wind S. W. in the afternoon, gentle.

1879, April 24. Many Scoters flying westward, many more than to the eastward; wind N. W., light early. Scoters stopped flying at 9.30 A.M.

1879, April 25. A good many Scoters commenced flying at 11 A.M., wind S. E. and E. No birds moving in the morning, when it was calm.

1879, April 27. Quite a number of Scoters going east, commencing to fly at noon with the wind. It was N. E. early and calm. No defined flight up to the 29th.

1880, April 9. No movement of Scoters up to date.

1881, April 16. A good many Scoters flying east, clear and cool, wind west.

1881, April 16. No special movement this spring until today; weather of past ten days very cold and stormy, snowing on the afternoon of the 15th, wind northeast; season two weeks late.

1881, April 21. A good many Scoters flying east; wind west by south and southwest. It was foggy, early and calm, no birds; cleared later and Scoters commenced to move.

1881, April 22. A good many Scoters going east, wind N. E.; no defined flight this spring before today, which is only a moderate movement.

1884, April 11. First ten days of this month very stormy, with rain and some snow. Northerly and northwesterly winds most of the time. On the 11th wind came southwest at noon, and quite a number of Scoters flew to the east.

1884, April 12. A good many Scoters flying eastward up to 9.30 A.M.; wind light, northwest, almost calm. At 9.30 A.M. wind changed to S.W. fresh, and birds stopped flying on this change.

1884, April 13. Not so many Scoters flying as yesterday, but still quite a movement to the eastward; wind south, nearly calm,

1884, April 15. Quite a flight from the westward; wind S. E., increasing.

1884, April 16. The largest flight this spring up to date.

- 1884, April 24. A good many Scoters, weather calm.
 " " 27. A good many Scoters.
 " " 28. A great many Scoters, but flying far out from shore.
 1884, April 29. A good many Scoters today; think about all the birds have passed.
 1886, April 8. First movement of Scoters going east; this is the earliest movement I have ever known. Weather moderate, wind S. and S. W.
 1886, April 11-12. Quite a flight to the eastward, wind S. and S. W. moderate, but no *large* movement up to the 20th. On 15th, saw three Purple Sandpipers, secured one.
 1886, April 21. A large flight of Scoters, notwithstanding the wind is north.
 1886, April 22. A large flight; wind S. W., and a little foggy. The Scoters flew very high.
 1886, April 23. Quite a movement, wind west in the morning and pleasant, then came S. E.
 1886, April 24. An enormous flight, wind south and pleasant, Scoters flying high.
 1886, April 25. A large flight, wind N. W., pleasant, Scoters all flying very high.
 1886, April 27. A small movement going west—wind west, pleasant.
 " " 28. A larger movement going west; wind south and pleasant; the migration drawing to a close.
 1887, April 10-11. Quite a number of Scoters flying to the east—the first this spring. Weather very warm.
 1887, April 16. A good many Scoters, wind S. E.
 1887, April 15. Quite a number of Scoters in the afternoon, wind S. E., moderate. None in morning, wind S. W.
 1887, April 20. Some Scoters flying to the west in the morning, and in the opposite direction in the afternoon; these were *not* migrating birds, but 'traders' Wind light north—S. W. in P.M.
 1887, April 21. A flight in the afternoon; none in the morning, wind light N. in the morning, N. W. and S. E. in the afternoon; Scoters flew high.
 1887, April 22. A good many Scoters flying wide off shore and high; wind light S. W.
 1888, April 14. A great many Scoters flying to the eastward in the afternoon, wind S. W., raining; in the morning, wind N. W. cold but few birds flying.
 1888, April 15. Some Scoters going east, wind north and cold.
 1888, April 6. A flight to the eastward; wind S. W., warm. This is the *earliest* flight I have ever heard of.
 1889, April 20. An *enormous* flight to the eastward, birds flying high in the morning with calm weather, and flying lower in the afternoon after it breezed up; wind S. W., warm.
 1889, April 21. Another *large* flight of Scoters to the eastward; wind

S. W., light and warm. Shot a full plumaged male Wood Duck from a flock of Surf Scoters, only *one* seen.

1890, April 17. A flight, mostly White-wings, going east; wind S. W., light in the morning, and fresh in the afternoon.

1890, April 21. Many Scoters flying high, wind W. early, and S. W. light at 7 A.M. Birds going east.

Some years no large flight takes place in the spring, the birds passing nearly all the time in small numbers, owing probably to peculiarities of the weather; but such years are very unusual.

JUNCO CAROLINENSIS SHOWN TO BE A SUBSPECIES.

BY JONATHAN DWIGHT, JR.

WHEN Mr. William Brewster in 1886 described a new *Junco* from the mountains of western North Carolina he considered it a subspecies of *J. hyemalis* and called it *Junco hyemalis carolinensis* (Auk, II, 1886, p. 248).

In the Supplement to the A. O. U. Check-List for 1889, this bird was accorded full specific rank. The reason for this never appeared; presumably it was on the ground that until two forms are proved to intergrade they are to be considered distinct species; and further, because no birds had been taken in the region intervening between the Catskill Mountains and North Carolina.

During the latter part of June, 1890, I visited the mountains of Pennsylvania expressly with a view to determining what sort of Juncos, if any, were found there, and, as I expected, obtained a series that clearly shows *carolinensis* to be only one end of a series that, beginning with typical *J. hyemalis* to the north, and extending southward along the Appalachian Mountain System, reaches its maximum differentiation at the southern end of these mountains.

I have compared my birds with breeding specimens from Nova Scotia and Quebec on the one hand, and from North Carolina and Tennessee on the other. On an average they most re-

semble northern examples, but several are quite typical of the southern form. A certain sootiness about some of them may be attributed to the fact that they were obtained in a region where coke ovens abound. The young and females are practically indistinguishable from the northern birds. The bills of fresh specimens were largely flesh-colored and vary considerably in size. Regarding five males I sent Mr. Brewster for comparison, he writes: "Nos. 2908, 2885 and 2886 are indistinguishable in color from breeding New England specimens (Mass. and N. H.), but they are larger and have larger bills. No. 2936 seems to be about intermediate between New England *Juncos* and *carolinensis*. No. 2887 is so very close to *carolinensis* that I cannot find any important differences. Taken as a whole your series indisputably furnishes the connecting links between the *Junco* that breeds in New England and his representative in Western North Carolina. This is precisely what we should expect, is it not?" "Of course," every one will say, and even Mr. Brewster himself in his original description of *carolinensis* writes: "Among a smaller number [of *hyemalis*] taken in early spring at Washington, D. C., however, are several with bills colored precisely as in the North Carolina birds. In other respects, however, these specimens are identical with *hyemalis* proper. It is probable that they represent the form which breeds in the mountains of Virginia and Pennsylvania and which naturally would be in varying degrees intermediate between extreme northern and southern types."

And yet in the face of such probabilities, after *carolinensis* has rested as a subspecies for several years and been written about by several observers who have met with it in Tennessee and Virginia as well as in North Carolina, it is suddenly raised to the rank of a full species. Now it looks as if it must be considered a subspecies again. The trouble seems to originate in the assumption that every newly described bird should stand as a species until proved a variety. Why not just as well expect every variety to stand as such until proved to be a species? The present instance would furnish, I think, an excellent text for a sermon upon the evils of nomenclature. I only wish, however, to call attention to it, for the case of *carolinensis* is but typical of others that have occurred and are still more likely to occur again. Although Mr. Brewster was quite right in the first place, the same cannot be

said of others who in their haste to get ahead of someone else, have burdened our books with endless synonymy, by describing from insufficient material. Would science lose much if time were taken by observers to gather suitable material before describing a bird on the chance of its being new? I do not say that this is entirely practicable, but I do say that when a man thinks that specimens proving doubtful relationships may be obtained in any given locality, he should at least endeavor to obtain them. If time or means fail, it is his misfortune, although the adage "Where there's a will there's a way," still has force.

A LIST OF BIRDS TAKEN AND OBSERVED IN
CUBA AND THE BAHAMA ISLANDS,
DURING MARCH AND APRIL, 1891.

BY CHARLES B. CORY.

DURING the past winter the writer visited Cuba and several of the Bahama Islands, and although nothing new was discovered in the way of birds or mammals, yet a list of the species noted is useful in studying the geographical distribution of insular forms, as well as being likely to add to our knowledge of the line of flight and season of migration of many of our North American species.

It is not intended to make this article more than a very condensed account of the route travelled and the different place visited, while giving a list of the species of birds observed and taken during the trip.

In a city like Havana, Cuba, the markets are always attractive from a naturalist's standpoint, as there one finds various kinds of birds, fish, and often mammals exposed for sale. Many birds are trapped and brought in alive, either in cages or tied together by their legs in bunches. Among the birds offered for sale in the Havana market we observed Cuban Quails (*Colinus cubanensis*), Doves (*Zenaida zenaida*), Cuban Meadow-larks (*Sturnella hippocrepis*), Orioles (*Icterus hypomelas*), and Guinea hens. There were also several cages of Blue-headed Quail Doves

(*Starnænas cyanocephala*), the latter seeming to be common, as they were nearly always to be found in the markets.

In crossing the harbor to take the train for Cienfuegos, we saw a number of Brown Pelicans and Buzzards flying about the bay, mostly near the entrance of the harbor, in the vicinity of Moro Castle.

From Havana to Cienfuegos by rail is a ride of about eleven hours, and the country through which the road passes is pretty and fertile. To our good fortune, a heavy rain had fallen during the night, so that we were not troubled with dust, which is usually the great objection to this ride.

Much of the land along the road is cleared and cultivated, the fields broken here and there by clumps of royal palms and cocoanut trees, or by extensive plantations of sugar cane, with the picturesque houses of the planters, and the tall chimneys of the sugar works standing out clearly in the distance. Along the road Buzzards, Anis (*Crotophaga ani*), Cuban Meadow-larks and Sparrow Hawks were common. Numerous small birds were flitting about the hedges of cacti and pineapple plants, and once, while stopping at a station, two Finches (*Eutheia lepida*), came within a few feet of the car window, lighting on a banana tree, which grew so close to the track that its leaves touched the cars. At San Domingo, a station where the passengers for Cienfuegos changed cars, we observed a number of Swifts, *Cypselus phænicobius* (Gosse), flying about the houses, and a Ground Dove (*Columbigallina passerina*) flew from a field and lit for a moment near the platform. The market in Cienfuegos is not attractive, and very few birds are offered for sale there. The only species observed, during two visits, were the Oriole (*Icterus hypomelas*), a Finch (*Eutheia lepida*), and some Cuban Parrots. From Cienfuegos to Santiago de Cuba is a run of some thirty hours by steamer, much of the time in sight of land.

In Santiago de Cuba, with its wonderful river-like harbor and its quaint, many colored houses, we found a most interesting city, but very little in the way of birds to repay our getting up at day-break to explore its market. The only birds offered for sale were a few which had been trapped alive, and included Cuban Parrots, several Black Finches (*Melopyrrha nigra*), and a pair of Nonpareils. Near the entrance of the harbor a pair of Tropic Birds (*Phaëthon flavirostris*) were flying about or floating on the water.

While in Cuba I recorded the following species:—

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| <i>Phaëthon flavirostris</i> Brandt. | <i>Ceryle alcyon</i> (Linn.). |
| <i>Ardea egretta</i> Gmel. | <i>Cypselus phœnicobius</i> (Gosse). |
| <i>Colinus cubanensis</i> (Gould). | <i>Sturnella hippocrepis</i> Wagl. |
| <i>Columbigallina passerina</i> (Linn.). | <i>Euethia lepida</i> Jacq. |
| <i>Cathartes aura</i> (Linn.). | <i>Passerina ciris</i> (Linn.). |
| <i>Catharista atrata</i> (Bartr.). | <i>Progne dominicensis</i> (Gmel.). |
| <i>Falco sparverio</i> Vig. | <i>Mimus polyglottus orpheus</i> (Linn.). |
| <i>Crotophaga ani</i> Linn. | |

NEW PROVIDENCE, BAHAMAS.

From Cuba we went to Nassau, New Providence, Bahama Islands, and spent two weeks, collecting and studying the birds of that Island. Having visited Nassau a number of times, and knowing the ground well, we were able to do considerable work during the short time we were there.

The following species were collected between March 14 and April 2:—

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| <i>Podilymbus podiceps</i> (Linn.). | <i>Loxigilla violacea</i> (Linn.). |
| <i>Aythya affinis</i> (Eyton). | <i>Euethia bicolor</i> (Linn.). |
| <i>Ardea herodias</i> Linn. | <i>Spindalis zena</i> (Linn.). |
| <i>Rallus coryi</i> Maynard.* | <i>Callichelidon cyaneoviridis</i> Bryant. |
| <i>Gallinula galeata</i> (Licht.). | <i>Ampelis cedrorum</i> (Vieill.). |
| <i>Colinus virginianus</i> (Linn.). | <i>Vireo crassirostris</i> (Bryant). |
| <i>Columbigallina passerina</i> (Linn.). | <i>Cœreba bahamensis</i> (Reich.). |
| <i>Strix pratincola</i> (Bonap.). | <i>Mniotilta varia</i> (Linn.). |
| <i>Crotophaga ani</i> Linn. | <i>Dendroica discolor</i> (Vieill.). |
| <i>Coccyzus minor maynardi</i> Ridgw. | <i>Dendroica coronata</i> (Linn.). |
| <i>Saurothera bahamensis</i> (Bryant). | <i>Dendroica palmarum</i> (Gmel.). |
| <i>Ceryle alcyon</i> (Linn.). | <i>Dendroica tigrina</i> (Gmel.). † |
| <i>Sphyrapicus varius</i> (Linn.). | <i>Geothlypis trichas</i> (Linn.). |
| <i>Doricha evelynæ</i> (Bourc.). | <i>Setophaga ruticilla</i> (Linn.). ‡ |
| <i>Contopus bahamensis</i> Bryant. | <i>Seiurus noveboracensis</i> (Linn.). |
| <i>Myiarchus sagræ</i> Gundl. | <i>Seiurus aurocapillus</i> (Linn.). |
| <i>Pitangus bahamensis</i> Bryant. | <i>Galeoscoptes carolinensis</i> (Linn.). |
| | <i>Mimocichla plumbea</i> (Linn.). |

* An adult female of this form was killed by the writer in a mangrove swamp near Nassau. When shot it was carrying a crab in its beak. This bird is very much lighter colored than any I have seen from Andros or the Berry Islands. Another was seen a few days afterwards, but escaped.

† This species was first observed March 19, and became common after March 23.

‡ First seen March 27, one bird shot March 29; a number seen April 1.

BERRY ISLANDS.

Procuring a schooner at Nassau, we sailed to the Berry Islands, distant about fifty-eight miles to the northwest. Some of these Islands are well wooded, in many places being covered with a thick growth of good sized trees, composed principally of lignum vitæ (*Guaiacum sanctum* L.) and what is known as the gumbo (*Obelmoschus esculentus*), and 'mastic' trees (*Bursera gummi-fera* L.). We spent a week on the Berry Islands and then proceeded to Biminis, leaving one of our collectors — Mr. Cyrus S. Winch — on the Islands to continue the work there. We procured the following species, all of which were taken between April 3 and April 20.

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| <i>Sterna maxima</i> (Bodd.). | <i>Callichelidon cyaneoviridis</i> Bryant. |
| <i>Pelecanus fuscus</i> Linn. | <i>Ampelis cedrorum</i> (Vieill.). |
| <i>Fregata aquila</i> (Linn.). | <i>Vireo crassirostris</i> Bryant. |
| <i>Ardea herodias</i> Linn. | <i>Cœreba bahamensis</i> (Reich.). |
| <i>Ardea virescens</i> Linn. | <i>Mniotilta varia</i> (Linn.). |
| <i>Ardea tricolor ruficollis</i> (Gosse). | <i>Compsothlypis americana</i> (Linn.). |
| <i>Nycticorax violaceus</i> (Linn.). | <i>Dendroica tigrina</i> (Gmel.). |
| <i>Rallus coryi</i> Maynard.* | <i>Dendroica coronata</i> (Linn.). |
| <i>Actitis macularia</i> (Linn.). | <i>Dendroica dominica</i> (Linn.). |
| <i>Columbigallina passerina</i> (Linn.). | <i>Dendroica kirtlandi</i> Baird.† |
| <i>Columba leucocephala</i> Linn. | <i>Dendroica palmarum</i> (Gmel.). |
| <i>Crotophaga ani</i> Linn. | <i>Dendroica discolor</i> (Vieill.). |
| <i>Coccyzus minor maynardi</i> Ridgw. | <i>Geothlypis trichas</i> (Linn.). |
| <i>Ceryle alcyon</i> (Linn.). | <i>Setophaga ruticilla</i> (Linn.). |
| <i>Doricha evelynæ</i> (Bourc.). | <i>Seiurus aurocapillus</i> (Linn.). |
| <i>Myiarchus sagræ</i> Gundl. | <i>Seiurus noveboracensis</i> (Gmel.). |
| <i>Agelaius phœniceus bryanti</i> Ridgw. | <i>Seiurus motacilla</i> (Vieill.). |
| <i>Loxigilla violacea</i> (Linn.). | <i>Galeoscoptes carolinensis</i> (Linn.). |
| <i>Euethia bicolor</i> (Linn.). | <i>Mimus polyglottos orpheus</i> (L.). |
| <i>Passerina ciris</i> (Linn.). | <i>Mimus gundlachi</i> Cab. |
| <i>Spindalis zena</i> (Linn.). | |

BIMINI ISLANDS, BAHAMAS.

The Bimini Islands are an isolated group about midway between Florida and Nassau, situated on the edge of the Gulf

* Five specimens of this interesting bird were taken on the Berry Islands. They were not uncommon, but were shy and difficult to find. They rarely attempt to fly, but run swiftly, dodging in and out among the mangrove roots.

† This species is not uncommon in the Bahamas. We procured three examples at the Berry Islands, and my collector also obtained specimens at Abaco and the Caicos Islands.

Stream, and having no harbor that vessels drawing more than seven feet of water can enter. We stopped here to meet Mr. Charles Washburn, one of my collectors, who had been staying on the Islands for about three weeks. Very few resident species were obtained, but it is more than probable that a number of Bahama forms occur there which were not observed by us, as the time spent on these Islands was much too short to make anything like a thorough investigation.

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| <i>Sterna maxima</i> Bodd. | <i>Vireo crassirostris</i> Bryant. |
| <i>Pelecanus fuscus</i> Linn. | <i>Vireo altiloquus barbatulus</i> (Cab.). |
| <i>Fregata aquila</i> (Linn.). | <i>Cæreba bahamensis</i> (Reich.). |
| <i>Ardea herodias</i> Linn. | <i>Mniotilta varia</i> (Linn.). |
| <i>Ardea virescens bahamensis</i> (Brewster). | <i>Helinaia swainsoni</i> Aud. |
| <i>Ægialitis vocifera</i> (Linn.). | <i>Compsothlypis americana</i> (Linn.). |
| <i>Columbigallina passerina</i> (Linn.). | <i>Dendroica tigrina</i> (Gmel.). |
| <i>Columba leucocephala</i> Linn. | <i>Dendroica coronata</i> (Linn.). |
| <i>Crotophaga ani</i> Linn. | <i>Dendroica dominica</i> (Linn.). |
| <i>Ceryle alcyon</i> (Linn.). | <i>Dendroica palmarum</i> (Gmel.). |
| <i>Sphyrapicus varius</i> (Linn.). | <i>Dendroica discolor</i> (Vieill.). |
| <i>Doricha evelynæ</i> (Bourc.). | <i>Geothlypis trichas</i> (Linn.). |
| <i>Tyrannus dominicensis</i> (Gmel.). | <i>Setophaga ruticilla</i> (Linn.). |
| <i>Agelaius phœniceus bryanti</i> Ridgw. | <i>Seiurus motacilla</i> (Vieill.). |
| <i>Euethia bicolor</i> (Linn.). | <i>Seiurus aurocapillus</i> (Linn.). |
| <i>Ammodramus savannarum passerinus</i> (Wils.). | <i>Poliophtila cærulea</i> (Linn.). |
| | <i>Galeoscoptes carolinensis</i> (Linn.). |
| | <i>Mimus polyglottos orpheus</i> (Linn.). |

LIST OF THE BIRDS COLLECTED BY C. L. WINCH
IN THE CAICOS ISLANDS AND INAGUA, BA-
HAMAS, DURING JANUARY AND FEBRUARY,
AND IN ABACO, IN MARCH, 1891.

BY CHARLES B. CORY.

CAICOS ISLANDS.

Dafila bahamensis (Linn.). — Not uncommon; breeds on the Caicos Islands.

Aythya affinis (Eyton).

Ardea rufescens Bodd. — Several specimens of both the white and colored plumage of this species.

- Ardea tricolor ruficollis* (Gosse).
Symphemia semipalmata (Gmel.).
Hæmatopus palliatus (Temm.).
Columbigallina passerina (Linn.).
Columba leucocephala Linn.
Zenaida zenaida (Linn.).
Pandion haliaëtus carolinensis (Gmel.).
Coccyzus minor maynardi Ridgw.
Crotophaga ani Linn.
Sphyrapicus varius (Linn.).
Doricha evelynæ (Bourc.).
Tyrannus magnirostris D'Orb.—Three specimens taken. It has not previously been recorded north of Inagua.
Loxigilla violacea (Linn.).
Euethia bicolor (Linn.).
Vireo crassirostris (Bryant).
Cœreba bahamensis (Reich.).
Compsothlypis americana (Linn.).
Dendroica petechia gundlachi Baird.
Dendroica coronata (Linn.).
Dendroica kirtlandi Baird—Two specimens taken. I believe it has no previous record so far south. The naturalists of the 'Albatros' expedition found it not uncommon in Rum Cay.
Dendroica palmarum (Gmel.).
Dendroica discolor (Vieill.).
Seiurus aurocapillus (Linn.).
Poliophtila cærulea (Linn.).
Mimus gundlachi Cab.
Margarops fuscatus (Vieill.).

INAGUA.

- Ardea herodias* Linn.
Sphyrapicus varius (Linn.).
Doricha lyrura Gould.
Tyrannus magnirostris D'Orb.
Myiarchus sagræ Gundl.
Loxigilla violacea (Linn.).—Mr. Winch writes me he believes the adult female of this species assumes a black plumage similar to the male. A number of black specimens taken by him proved on dissection to be females.
Euethia bicolor (Linn.).
Vireo crassirostris (Bryant).
Cœreba bahamensis (Reich.).—Birds from Inagua have larger bills than those which occur on the northern Bahama Islands.
Dendroica tigrina (Gmel.).
Dendroica petechia gundlachi Baird.
Dendroica coronata (Linn.).

Dendroica dominica (Linn.).

Dendroica discolor (Vieill.).

Seiurus aurocapillus (Linn.).

Polioptila cærulea (Linn.).

Mimus gundlachi Cab.

Mimus polyglottos elegans (Sharpe). — Since writing the paper on *Mimus polyglottos* and *M. orpheus* which appeared in the January 'Auk' (p. 45) I have received some fifty specimens of the small *Mimus* from Inagua. With this additional material for comparison I find that a large majority of the Inagua specimens are somewhat smaller than *orpheus* or *polyglottos* and have the primary coverts nearly and often completely covering the white on the quills. These differences are not constant but are probably sufficient to justify subspecific separation.

Margarops fuscatus (Vieill.).

A box of birds lately received from Inagua contained two species not observed by Mr. Winch. These are:—

Dendroica striata (Forst.). — Six specimens, April 23 to May 2.

Dendroica cærulescens (Gmel.). — Nine specimens, April 22 to May 1.

ABACO.

Ægialitis semipalmata Bonap.

Columbigallina passerina (Linn.).

Cathartes aura (Linn.).

Crotophaga ani Linn.

Ceryle alcyon (Linn.).

Dryobates villosus maynardi
Ridgw.

Doricha evelynæ (Bourc.).

Sporadinus ricordi (Gerv.).

Myiarchus sagræ Gundl.

Pitangus bahamensis Bryant.

Loxigilla violacea (Linn.).

Euetheia bicolor (Linn.).

Spindalis zena townsendi Ridgw.

Vireo crassirostris (Bryant).

Vireo altiloquus barbatulus (Cab.).

Cæreba bahamensis (Reich.).

Mniotilta varia (Linn.).

Dendroica kirtlandi Baird.

Dendroica petechia gundlachi
Baird.

Dendroica discolor (Vieill.).

Dendroica coronata (Linn.).

Dendroica dominica (Linn.).

Geothlypis trichas (Linn.).

Geothlypis tanneri Ridgw.

Seiurus noveboracensis (Gmel.).

Seiurus aurocapillus (Linn.).

Polioptila cærulea Linn.

Galeoscoptes carolinensis (Linn.).

Mimus polyglottos orpheus (L.).

Mimocichla plumbea (Linn.).

RECENT LITERATURE.

Gätke's '*Die Vogelwarte Helgoland*'.*—The long expected report of Herr Gätke's forty years' observations on the birds of Helgoland forms a beautiful volume of over 600 pages, replete with matter of the highest interest to ornithologists and bird-lovers the world over. Helgoland, a rocky islet at the mouth of the River Elbe, about a mile in length by a third of a mile in width, rising almost vertically on all sides to a height of about 200 feet above the sea, has long been celebrated in ornithological annals for its many waifs and strays of bird life, which through Herr Gätke have found an ever alert and faithful chronicler. Helgoland is situated in one of the great highways of bird migration, and from its isolated position and height above the sea is a natural resting place for the hordes of tired wanderers on their long semi-annual journeys. At this little watch-tower Herr Gätke has taken nearly four hundred species (396 is the exact number recorded), including waifs "from the far North, East, West, and South,"—from Siberia, North America, the Arctic Regions, Africa, and Asia Minor.

The work is edited by Dr. Rudolf Blasius, who dedicates it to the memory of his father who brought early to notice the remarkable observations of Herr Gätke. The work is divided into three parts: I, Migration of Birds; II, Change of Color in Birds without moulting; III, Birds observed at Helgoland. The first part contains chapters on (1) The ordinary migration at Helgoland (pp. 3-23); (2) Direction of the migratory flights, (pp. 24-45); (3) Height at which migratory birds fly (pp. 46-64); (4) Rapidity of their flight (pp. 65-75); (5) Meteorological conditions affecting migration (pp. 76-101); (6) Migration in relation to age and sex (pp. 103-115); (7) Exceptional appearances (pp. 116-133); (8) What guides birds during migration? (pp. 134-146); (9) What causes birds to migrate? (pp. 148-152).

Herr Gätke's observations throw much light on many problems connected with migration, and it is to be hoped that his '*Vogelwarte Helgoland*' will be promptly translated and made generally available to English readers. In his chapter on 'Migration in relation to age and sex' (*Zug nach Alter und Geschlecht*), he combats vigorously what he considers the erroneous ideas of the early times respecting the fall migration, namely, that the old birds are the leaders, teachers, and guides of the young. He gives it as incontrovertably proven by his observations on the birds of Helgoland, that, in the fall, the young birds begin to appear within from six to eight weeks after they leave the nest, and that the old birds of the same species follow some two months later, and that the migration as a rule is closed by the finest old males. In spring he finds it to be the in-

* *Die | Vogelwarte Helgoland. I — | Von Heinrich Gätke, | . . .* [= 5 lines, titles]
| — | Herausgegeben von | Professor, Dr. Rudolf Blasius. | — | Braunschweig | Joh.
Heinr. Meyer. | 1891. | Roy. 8vo, 6ll., pp. 1-609, and frontispiece (portrait of author).

variable rule in all species that the finest old males reach the breeding grounds first, followed soon by the old females, while the young birds close the migration.

He notes the occurrence at Helgoland of fifteen species of North American birds, each, with the exception of two, represented by a single example, as follows:—

| | |
|-----------------------------------|---------------------------------|
| <i>Merula migratoria.</i> | <i>Dolichonyx oryzivorus.</i> |
| <i>Turdus u. swainsoni.</i> | <i>Charadrius dominicus.</i> |
| <i>Turdus a. pallasi.</i> | <i>Actitis macularia.</i> |
| <i>Turdus fuscescens.</i> | <i>Tryngites subruficollis.</i> |
| <i>Galeoscoptes carolinensis.</i> | <i>Larus philadelphia.</i> |
| <i>Harporhynchus rufus.</i> | <i>Rhodostethia rosea.</i> |
| <i>Dendroica virens.</i> | <i>Xema sabinii.</i> |
| <i>Anthus pensilvanicus.</i> | |

The migration of each of the nearly four hundred species is treated in detail, sometimes several pages being given to a single species. A work on birds possessing more general interest has doubtless not for a long time appeared, it fully warranting the pleasant anticipations its announcement long since awakened.—J. A. A.

Cory's 'Birds of the Bahama Islands'.*—The revised edition of Mr. Cory's 'Birds of the Bahama Islands', issued a few months since, is a 'remainder' from the first edition, issued with uncolored plates, and the addition of nine interpolated unpagged leaves, giving (1) a 'Preface to Revised Edition' (one page); (2) 'Ornithological Bibliography of the Bahama Islands' (2 pages, 16 titles); (3) 'Species and Subspecies described since 1880' (9 pages, 14 species and subspecies); (4) 'Species and subspecies which have been added to the Fauna since 1880' (1 page, 2 species and 1 subspecies); (5) 'Corrections and changes which have been made since 1880, with remarks on several species which should be eliminated' (2 pages, containing remarks on 8 species); and (6) 'Changes in Nomenclature and Classification' (2 pages). *Mimocichla rubripes*, *Loxigilla noctis*, and *Sporadinus bracei* are expunged from the list of Bahama birds, as given in the first edition, and the last named species is considered as identical with *S. ricordii*. The 'changes in nomenclature' consist mainly of a concordance, showing the present equivalents of various names used in the first edition. During the interval of ten years between the publication of the original and the revised edition much has been added to our knowledge of the subject, and the author has "thought it advisable to issue the few remaining copies of the first edition in the form of a revised edi-

* The Birds | of the | Bahama Islands | containing | many birds new to the Islands and a number of undescribed | winter plumages of North American birds. | By Charles B. Cory, | . . . [= 12 lines, honorary titles, etc.] Revised Edition. | Estes & Lauriat, | Boston, U. S. A. | 1890.—4to, pp. 1-250, plus 9 unpagged interpolated leaves, pll. 8, uncolored.

tion, giving the species or races described or eliminated, and whatever changes that have been made during that time." These changes of course greatly increase the value of a work which has proved very serviceable to sojourners in the Bahamas interested in the birds of the Islands, as well as to ornithologists. — J. A. A.

Grant's 'Our Common Birds.'* — The purpose of this little book is to furnish the beginner with useful hints in the study of the bird life about him. The work is unique in plan and execution. Ninety species are treated, selected from the more common and striking birds met with in the vicinity of New York City, the males only of which are described. The illustrations consist of photogravures from stuffed specimens. They serve to show what can be done by means of photography in illustrating from museum specimens. Where the pattern of coloration is distinctive, the birds are readily recognizable from the portraits here presented. In other cases it would be difficult for even the ornithological expert to tell them. In the case of large birds, where the figures are necessarily much less than natural size, the effect is quite satisfactory; with the smaller birds, the figures of many of which are nearly or quite natural size, all the defects of taxidermy (which unfortunately are glaring) are magnified, with most unhappy results. Although in many instances no idea of color, or even the distribution of the different tints, can be given by any known process of photography, yet with specimens mounted in the highest style of the taxidermists' art, and with some attempt at a natural effect in respect to pose and accessories, the results might be more satisfactory.

The text is well written, much care having been taken to secure accuracy of statement, while the spirit of the book is admirable. Much good advice as to where, how, and when to look for birds is given in the first fifty pages, including explanations of many technicalities, and a calendar indicating the seasons when the various species may be looked for. The author is an enthusiastic admirer of nature and strives to impart his enthusiasm to his readers. The book has thus a decidedly literary flavor. It is in the form of an oblong octavo, and in typography and arrangement is an attractive little volume. Doubtless it will touch a popular chord and be widely welcomed as a stimulating companion to many who, without aiming to be scientific, desire a speaking acquaintance with the feathered tenants of wood and field. — J. A. A.

Thompson's 'Birds of Manitoba.'† — In a paper of nearly two hundred pages Mr. Thompson gives his field notes on the birds of Manitoba made during a three years' residence in the Province, covering parts of the

* Our Common Birds | and how to know them | By | John B. Grant | With sixty-four Plates | New York | Charles Scribner's Sons | 1891. | pp. 216, 64 photogravure illustrations.

† The Birds of Manitoba. By Ernest E. Thompson, of Toronto, Canada. Proc. U. S. Nat. Mus., Vol. XIII, 1890, pp. 457-643, pl. xxxviii. (Published June, 1891.)

years 1882 to 1887, supplemented by those of "numerous observers in various parts of the Province." In addition to this an attempt is made to include all published records bearing on the distribution of Manitoban birds which have not appeared in distinctively ornithological publications. In an introduction of eight pages the author defines the boundaries of the Province, and describes in much detail its physical features. The accompanying map shows also the distribution of both the deciduous and coniferous forests, the marshes, sand dunes, and prairies. Then follows (1) The annotated list of the birds, numbering 272 species and subspecies; (2) 'A chronological list of the principal books and articles consulted (4 pp. with 44 titles); 'A list of the manuscripts used in completing the foregoing Notes' (2 pp. 16 titles); and (4) an index to the paper.

Mr. Thompson's own copious field notes, supplemented by a large amount of inedited matter, render the paper a most welcome and important contribution to the ornithology of what was a practically unworked field when Mr. Thompson entered it. His list of 'The Birds of Western Manitoba,' published in 'The Auk' for 1888 (III, pp. 154-156, 320-329, 453), has shorn it of much of the novelty it would otherwise have presented, and prepared us for the fuller exposition of the subject his brief annotations in the former paper foreshadowed. Not only does each page add to our knowledge of the distribution of the birds over the region in question, but also of their habits and life history. Many of his own notes are given as actual transcripts from his field journal, and have thus the freshness and inspiration of direct contact with nature. The inedited manuscripts include important observations, often covering considerable periods in the field, of a dozen or more well known Canadian ornithologists, many of these documents having been originally prepared for and communicated to the A. O. U. Committee on Bird Migration. In addition to these are copious extracts from the unpublished 'Observations on Hudson's Bay' by Thomas Hutchins, who for twenty-five years, prior to 1780, was an agent of the Hudson's Bay Company. While the literary execution of the work is not above criticism, many of the biographical notes have a spirit and originality amply atoning for minor defects.—J. A. A.

Canadian Bird Notes.—A paper of 25 pages, entitled 'Proceedings of the Ornithological Sub-section of the Biological Section of the Canadian Institute,* for the months of January, February, and March, 1890, contains 110 separate notes, published over the names of the contributors, on the birds of the region about Toronto. They relate to uncommon visitors, and the nesting of the rarer kinds, and include a large number of very interesting records, which are thus conveniently brought together and made readily accessible. Mr. W. Cross records and describes a hybrid *Pinicola enucleator* × *Carpodacus purpureus*; Dr. C. K. Clarke brings forward very conclusive evidence of parasitism in the Black-billed Cuckoo (*Coccyzus erythrophthalmus*), citing three instances of its depositing its

* Extract from Transactions of the Canadian Institute, 1890.

eggs in the nests of other birds, leaving them to be hatched and the young reared, in one case by a pair of Yellow Warblers, in two cases by Chipping Sparrows; Mr. E. E. Thompson records the capture of a male English Linnet (*Linota cannabina*) at Toronto. There are many interesting winter records of visitors from the far North, and various instances of rather southern species wintering. The article concludes with a list of the ornithological papers published in the 'Canadian Journal' (1853 to 1889, inclusive).

A second paper, entitled, 'The Birds of Ottawa,' gives a list of birds found in the neighborhood of Ottawa, compiled from the records of the Ottawa Field-Naturalists' Club, embodying the work of the 'Ornithological Branch' of the Club from the beginning of the year 1881 to the end of the year 1890. This list is a revision of the list published in 1882, from which a number of species are eliminated and others added, including two here given for the first time, the total number now recorded being 224. The district covered is an area of thirty miles radius from the city of Ottawa. The annotations consist generally of abbreviations signifying the season of occurrence and relative abundance, though many of the rarer species are followed by more or less extended remarks.—J. A. A.

Stone's List of 'Birds collected in Yucatan and Southern Mexico.' † — Mr. Witmer Stone, Curator of Birds in the Philadelphia Academy of Natural Sciences, accompanied Prof. Angelo Heilprin on his recent expedition to Yucatan and the Highlands of Southern Mexico, of which the present paper gives the ornithological results. An annotated list is given of 96 species collected in Yucatan during about five weeks, from Feb. 22 to March 26, 1890. A list of the 18 species taken during a few days' stay at Orizaba, and a third list of 33 species taken near Chalchicomula and on the Peak of Orizaba, completes the paper. Interesting comparisons are made between the bird life of the several localities visited in Southern Mexico. A few species collected by Mr. F. C. Baker at different points in Western Mexico are also mentioned.—J. A. A.

The Owls in the Collection of the Philadelphia Academy of Natural Sciences. — Mr. Witmer Stone has recently published ‡ a 'Catalogue of the Owls in the Collection of the Academy of Natural Sciences of Philadelphia,' which numbers 113 species, represented by 525 specimens, including the types of 14 species. Among the types are those of several of Cassin's species, of several of Gould's Australian species, and of *Bubo subarcticus* Hoy.—J. A. A.

* Ottawa Naturalist, Vol. V, No. 2, May, 1891.

† Proc. Acad. Nat. Sci. Phila., 1890, pp. 201-218.

‡ Proc. Acad. Nat. Sci. Phila., 1890, pp. 124-131.

Stone on the Genus *Psilorhinus*.* — Of the four species described by authors—*P. morio* (Wagl.), *P. mexicanus*, Rüpp, *P. cyanogenys* Sharpe *P. vociferus* (Cabot)—*P. cyanogenys* Sharpe is referred to *P. mexicanus*, the characters of *P. cyanogenys* being individual and inconstant; *P. vociferus* also proves barely separable from *P. mexicanus*. The type of *P. vociferus* is in the collection of the Academy. — J. A. A.

Professor Thompson on the Systematic Position of *Hesperornis*. — Among the more recent of the anatomical papers from time to time published by University College, Dundee, is one by Professor D'Arcy W. Thompson 'On the Systematic Position of *Hesperornis*,† in which the author, after a careful and concise comparison of *Hesperornis* with *Colymbus*, sums up as follows: "It appears to me that from purely osteological characters, the wide differences between *Hesperornis* and any Ratite, and its close resemblance to *Colymbus* or to *Podiceps* is clear and patent."

The Colymbine affinities of *Hesperornis* have been dwelt upon at some length by Dr. Fürbringer; and Dr. Shufeldt, although giving no reasons for his conclusions, has stated his opinion that the Loons and Grebes are derived from the same ancestral stock as that to which *Hesperornis* belonged. Professor Thompson seems to have to some extent misunderstood Dr. Fürbringer's conclusions, and the latter in a recent paper has felt the necessity of giving full quotations from his 'Morphology' to show that Professor Thompson's views were substantially those previously brought forward by himself.

We are not quite prepared to accept the statement that the resemblance existing between *Hesperornis* and *Colymbus* are "as great as between *Strigops* and the other Parrots," preferring to hold with Dr. Helm that *Hesperornis* is an early and highly specialized offshoot from the stem of which the Loons and Grebes are later branches.

In respect to the pelvis, it hardly seems that Professor Thompson or Dr. Helm lay quite enough stress upon the general character of the pelvis and the separation of ilium from ischium; although, on the other hand, this does not necessarily indicate Struthious affinities, a more exact statement of the case, perhaps, would be that the pelvis of *Hesperornis* is of a low, or generalized type, highly modified for swimming.

There are many interesting points that might be dwelt upon, but space will not permit.

The many structural resemblances—morphological and physiological—between *Hesperornis* and *Colymbus* are well brought out, and we think that most ornithologists will agree with Professor Thompson that the proper place for *Hesperornis* is a long distance from the Ostriches.

* On the Genus *Psilorhinus* Rüppell. By Witmer Stone. Proc. Acad. Nat. Sci. Phila., 1891, pp. 94-96.

† Studies from the Museum of Zoölogy in University College, Dundee, Vol. I, No. 10.

To slightly modify his words we might say that *Hesperornis* is a Colymboid bird of great size and prodigious swimming power, which, while losing its wings and sternal keel and otherwise somewhat modifying its shoulder-girdle as the faculty of flight degenerated, has retained in its brain case, its palate (?), its mandibles, its vertebræ, its sternum, pelvis, and hind limbs resemblances to existing *Colymbi* that clearly indicate its affinities with these birds; and with these modifications we are quite in accord with Professor Thompson. — F. A. L.

Townsend on the Birds of the Coast and Islands of Upper and Lower California.* — The observations here recorded were made during a cruise of the U. S. Fish Commission steamer 'Albatross' from San Francisco to the Gulf of California, during the winter of 1888-89. The collection of birds gathered by Mr. Townsend numbered 226 specimens, representing 92 species and subspecies, 11 of which are here described as new. The islands at which collections were made are San Clemente, San Nicolas, Santa Barbara, Santa Rosa, and Santa Cruz, off California, and Guadeloupe, Cerros, Clarion, Socorro, San Benedicte, Carmen, George, and Angel Guardia, off Lower California. The paper consists of thirteen separate lists, representing as many distinct localities at which collections were made, with a record of the specimens taken, but generally no further remarks as to whether the species were common or otherwise. The following are described as new: (1) *Speotyto rostrata*, (2) *Zenaidura clarionensis*, (3) *Troglodytes tanneri*, (4) *Puffinus auricularis*, all from Clarion Island, off Lower California; (5) *Oceanodroma socorroensis*, from Socorro Island; (6) *Amphispiza belli cinerea*, from Ballaenas Bay, Lower California; (7) *Octocoris alpestris pallida*, from near the mouth of the Colorado River, Sonora; (8) *Melospiza fasciata graminea*, from Santa Barbara Island; (9) *Helminthophila celata sordida*; (10) *Melospiza fasciata clemente*, and (11) *Otocoris alpestris insularis*, from San Clemente Island.

A single specimen of *Halocyptena microsoma* Coues was taken in Panama Bay, March, 1888, forming the second known specimen of the species. — J. A. A.

Palmer on Birds observed during the Cruise of the 'Grampus.'† — The U. S. Fish Commission schooner 'Grampus,' on her summer cruise in 1887, visited the Magdalen Islands and Bird Rocks in the Gulf of St. Lawrence, the Funk and Penguin Islands, the Mingan Islands, and

* Birds from the Coasts of Western North America and adjacent Islands, collected in 1888-89, with Descriptions of New Species. By Chas. H. Townsend. Proc. U. S. Nat. Mus., Vol. XIII, 1890, pp. 131-142.

† Notes on the Birds observed during the Cruise of the United States Fish Commission Schooner Grampus in the Summer of 1887. By William Palmer. Proc. U. S. Nat. Mus., XIII, 1890, pp. 249-265.

touched at points on the coasts of Newfoundland and Labrador, Mr. Palmer accompanying her for the purpose of observing and collecting the fish-eating birds, their eggs and young. He records 40 species of water birds, respecting most of which he has copious and very interesting notes, especially respecting the species of *Alcidæ* and *Laridæ* observed. He also noted incidentally 38 species of land birds, an annotated list of which is also presented, in which "*Corvus corax nobilis* (Ridgw.)" is doubtless a *lapsus calami* for *Corvus corax principalis* Ridgw. — J. A. A.

Lucas on the Anatomy and History of the Great Auk.* — In 1887 Mr. Lucas, under the direction of the late Professor Baird, visited Funk Island for the purpose of obtaining remains of the great Auk. The object of this visit was satisfactorily accomplished, Mr. Lucas succeeding in obtaining not only a large quantity of the bones of this extinct bird, but much interesting information respecting one of its former favorite breeding resorts. The results of these investigations are given in the present paper, which opens with a chapter entitled 'The Bird Rocks and Funk Island in 1887,' occupying the first twenty pages. It includes an account of the gradual extinction of the Great Auk at the localities named, and its causes, etc., and is illustrated with a sketch map of Funk Island. The second part of the paper is on 'Skeletal Variation in the Great Auk,' the principal variations being graphically presented by means of diagrams. The paper concludes with a 'List of Books and Papers Relating to the Great Auk,' an annotated list occupying five pages, from which it appears that the earliest known reference to the Great Auk was published in 1534. There are photogravure illustrations of the mounted specimen of the Great Auk, and of the Great Auk's egg, in the collection of the National Museum. The paper presents much valuable historic and anatomical information about this flightless and now extinct bird. — J. A. A.

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GENERAL NOTES.

Brünnich's Murre in Connecticut.—The occurrence of Brünnich's Murre (*Uria lomvia*) along the Connecticut coast during the past winter (1890-91) in large numbers, seems worthy of notice, since the species was not recorded in Linsley's or Merriam's list, nor have I seen any Connecticut record.

On February 7 I picked up a dead specimen on the beach at Bridgeport and a few days later three more. The finding of these specimens was the first indication I had of the occurrence of the bird, as I had been absent from home during the winter until the above mentioned date.

At New Haven I saw a stuffed specimen in the store of Folsom & Co. and learned that it was secured at Saugatuck Harbor by Mr. D. C. Sanford, a government surveyor, who had also secured another at that place.

Mr. W. F. Davis of Stony Creek writes me that hundreds could be seen there from the 1st to the 10th of January, so tame they could be taken in the hand; they could fly but seemed hungry and fatigued, some being found five miles from the salt water; he thought many died of starvation. He adds that he used to see great numbers of them when a boy, at Nantucket Shoals, where they were called Murres.

At Stratford I found a stuffed specimen in the village drug store and another in the possession of Mr. L. B. Beers. They had been seen in large numbers and attracted general attention. They were described as very tame but no one that I talked with seemed to think that they had starved. Mr. Theodore Judson, keeper of the Stratford Light, assured me that he had seen the bird occasionally before, but had regarded it as rare.

Mr. Wm. H. Hayt, an associate member of the A. O. U., writes me from Stamford as follows: "The Murres were plentiful here from Dec. 20 to about Feb. 10. A large number were shot. Fourteen specimens fell under my own observation. They all seemed to be in the last stages of starvation. One was found by the road side at some distance from the shore where it had evidently fallen from exhaustion. The stomachs of those which I examined contained nothing but sand.

I received information from several other persons at different places but think the above sufficient to indicate the extent of the movement. As all the specimens I examined were Brünnich's Murre, I refer all the notes to that species.

Since writing the above I have been informed by Mr. D. C. Sanford that from Penfield Reef Light House, off Black Rock, to the mouth of Saugatuck River "there were thousands of them, and hundreds were shot off Saugatuck."—C. K. AVERILL, Jr., *Bridgeport, Conn.*

The Sandhill Crane (*Grus mexicana*) in South Carolina.—On October 18, 1890, I heard a most remarkable sound, something like that made by blowing a large tin horn. I was told by one of the negroes on the plantation that it was a Wild Goose. Early in the morning of the following day I heard the note again and saw the bird flying in the heavens. One glance was enough to show me it was a Crane. After sailing about for some hours it flew down in a corn field among a drove of cows. I started in pursuit with my brother-in-law: he taking a stand, and I one, about a hundred yards away. The bird rose but sailed away from both of us,—not near enough for a shot. It sailed about in circles until it was lost to our view.

On the 21st I started to the corn field again with the hope of seeing the bird. Upon shooting four Doves (*Zenaidura macroura*), the Crane arose from the field where it had been feeding along with the cows and flew about a mile away. Away I went in pursuit but found it was impossible to get nearer than a hundred yards without being seen.

I waited under some bushes for an hour hoping it would come nearer. The whole time the bird remained on the ground it was making the trumpet-like sound. Finally it flew and lit about half a mile off in a myrtle pasture, where there were two ponds of water. I knew I would in the end secure the bird, so walking cautiously about I at last saw the red on his head. He was standing in the middle of the pond, and as he rose I secured him. The bird is an adult male in perfect plumage. Although the specimen is considerably smaller than average *Grus mexicana*, for the present it may stand as such.

This is the first record of the capture of this bird in the State, to my knowledge.—ARTHUR T. WAYNE, *Mt. Pleasant, S. C.*

Capture of a Fourth Specimen of *Ardetta neoxena*—A specimen of *Ardetta neoxena* was shot on the Kissimmee River, Florida, by Mr. R. C. Stewart, on May 19, 1890. The bird is a male in full plumage, and is apparently exactly like the type. Mr. Stewart claims to have seen another, but he was unable to secure it. This is I believe the fourth specimen of the species known to have been taken, three of them having been recorded from the lower Kissimmee or Okeechobee region, and the fourth is claimed to have been killed in Ontario, Canada, and was sent to Mr. Ridgway for examination by Mr. McIlwraith.—CHARLES B. CORY, *Boston, Mass.*

Notes on the Nest and Habits of Cory's Bittern (*Botaurus neoxenus*).—Mr. J. F. Menge of Fort Meyers, Florida, has kindly written me the following account of a nest of Cory's Bittern. He is familiar with the bird and is the gentleman who collected and sent to me the specimen mentioned in 'The Auk,' Vol. VI, 1889, p. 317. This letter is under date of May 20, 1891, and I quote from it as follows:

"I herewith send you notes concerning the Bittern as requested by Mr. J. W. Atkins, first found on 8th of June, 1890, two and a half miles above Fort Thompson, Florida, in a small willow swamp on the borders of Lake Flint. It was built of willow twigs and lined inside with maiden cane leaves. It was in a low bush two feet and a half above the surface of the water. There were four young birds, about two-thirds grown in the nest. I had one of the old birds in my hand, which I think was the female. She was not inclined to fight and would not leave the nest. The other old bird was two or three feet from me and seemed a much larger bird. I did not disturb them and when I let the old bird go she hopped back on her nest as though she were accustomed to being handled. The Brown Bittern [local name for *Botaurus exilis*, *B. neoxenus* being known as the Black Bittern—W. E. D. S.] will fight, for I have had them come up

within six inches of my hand when collecting eggs. I shall try and get more specimens of the bird I sent you [No. 3237. W. E. D. S. Register; see Auk, VI, p. 317] but they are not very plentiful here and are hard to find."—W. E. D. SCOTT, 58 William Street, New York City.

Phalaropus lobatus off Scituate, Mass.—On August 30, 1890, I made my first acquaintance with the Northern Phalarope. As my friend Mr. Marcus Barber and myself were returning from a trip to the Gurnet, Plymouth Harbor, in my sail-boat, when off Fourth Cliff Life Saving Station, we observed what we at first supposed was a large flock of Sandpipers, some two hundred or more, flying to and fro from shore, and were surprised to see them settle on the water. Heading the boat for them, we soon came within gunshot, and secured eight as they rose, they being so scattered as not to offer a good shot. On picking them up, I at once recognized them as one of the Phalaropes. We watched this flock pass from view to southward. Leaving my friend soon after at the Cove, I made sail for Scituate Harbor, about a mile distant; but had not been long underway when the boat was in the centre of a second flock as large as the first, giving me a fine opportunity to watch the bright eyed little birds, as they rode up and down on the light sea that was running. These finally took wing, but had not passed from sight before a third flock nearly as large showed up over the bow; making in all between five and six hundred birds seen within an hour's time. The last were nearly opposite the Harbor, in which I soon dropped anchor. The birds secured proved to be all young of both sexes, except one, an adult female, but no two were alike in plumage. Taking into consideration Mr. W. A. Jeffries' account of 'Phalaropes at Swampscott' (Auk, Jan. 1891, p. 112), and the statement made by my friend Mr. Barber, who in ten years' service along shore "never saw anything like it before," the flight of Phalaropes along our shore last fall must have been a remarkable one. The wind at the time was blowing a fair northwest breeze.—H. D. EASTMAN, Framingham, Mass.

The Wild Pigeon (*Ectopistes migratorius*) on the Pacific Coast.—I was recently informed by a correspondent, who edits a small weekly journal published in Philadelphia, that Mr. Caleb S. Cope of West Chester, Pa., had seen Wild Pigeons in considerable numbers in "Washington Territory."

This information had been elicited in response to the republication in the above mentioned journal of Mr. Brewster's article in 'The Auk' of October 1889, on the 'Present Status of the Wild Pigeon as a bird of the United States.' A gentleman living in Lycoming Co., Pa., who used to trap Wild Pigeons many years ago, informed my friend that it was commonly understood among those in the business that the Pigeons had gone to the far West and British Columbia on account of their persecution in the eastern and central portions of the United States.

Such testimony being contrary to the published experience of ornithologists, I wrote Mr. Cope to discover by a few leading queries whether his identification of the species was correct. His answers were highly satisfactory, showing that he was not only an admirer of nature but an accurate and intelligent observer. I forwarded his letter to Mr. Brewster, with whom I had previously had some correspondence on the same subject, and he expressed his belief that the evidence presented was unmistakably genuine and worthy of immediate publication. During the spring of 1887, in company with his son, Mr. Cope travelled extensively through the West—"straggling beyond the plains into California, Oregon, Western Washington, and Vancouvers' Island"—where, he says, "I saw and heard more Wild Pigeons (*Ectopistes*) than I remember to have ever met with in any other place." The locality where most of the Pigeons were observed was on an extensive plain in Pierce County, Washington, fifteen miles east of Puget's Sound, between the Sound and the Cascade mountains.

This fertile plain was "dotted over with clumps of pine and fir trees, in many instances bent down by flocks of Wild Pigeons that feasted on the strawberries which in some places were so abundant as to give the sward a scarlet tinge." These flocks numbered several hundreds in each, and during the short time spent there (a few days) plainly showed they were but "transitory visitants" passing northward and unlikely to breed in that vicinity.

It is difficult to account for this (so far as known) unprecedented occurrence of a well-known bird in such numbers in a region where hitherto it had been seen only as a rare straggler.

Taking into account the power of flight and wandering nature of the Passenger Pigeon and coupling this with the persecution it has been subjected to during the nesting season, we might naturally expect a change of habitat, but even the most heterodox would scarcely conceive of a sudden and united movement across a thousand miles of unknown territory and two ranges of lofty mountains for the sole purpose of establishing a new route of operations in more peaceful territory. If this was the actual state of affairs in 1877 and has continued to be, the A. O. U. may well look to its laurels. But this is scarcely possible. The region described has been frequently traversed by naturalists and others who would appreciate and report such an unusual occurrence if repeated year after year. Every bird lover would rejoice to hear that this wonderful bird had finally outwitted its great persecutor and lengthened its lease on life by 'going West' in the true American spirit of liberty; and it is fitting that we use every effort to protect and foster a movement so unprecedented. But a study of the past history of *Ectopistes* should prepare us for these apparently startling disclosures. There is no American bird of strictly gregarious and migratory habits that is found breeding over so great an area—viz., from Mexico to Hudson's Bay and British Columbia, and from the Atlantic Ocean to the Rocky Mountains.

Mr. Nuttall acutely observes in this relation: 1st, that the congregating propensity of this bird has "no relation with the usual motives to migration among other birds"; 2nd, "Nearly the whole species which at any one time inhabit the continent are found together in the same place"; and 3rd, "They do not fly from climate, as they are capable of enduring its severity and extremes." These characteristics, being rendered the more wonderful and effective by surpassing power of flight, enable the Wild Pigeon to defy the petty limitations which environ and restrict other migratory birds and even to set at nought the one law of nature which beyond any other has proved itself most absolute, tyrannical and mysterious,—the law of geographical distribution of species.

Viewed from this standpoint we may regard the occurrence of *Ectopistes migratorius* on the Pacific Slope as a thing so natural that we wonder why it never happened before. Indeed there should now be many of us who doubt not that it has often happened, and who ask, on behalf of our feathered cosmopolite, an ampler breeding range than the books accord, making it from Ocean to Ocean, and from Mexico to Alaska. Despite our attempts to bridge these gaps in the life-history of North American birds, there yet exists in New World ornithology a *terra incognita* of no small proportions, a fact that should not discourage, but inspire us all to renewed endeavor.—SAMUEL N. RHOADS, *Haddonfield, N. J.*

The Breeding Range of the Sparrow Hawk (*Falco sparverius*) in Texas.—That this bird is credited with "breeding in suitable localities from Maine to California, and from the Fur Countries south into Mexico" by old and undoubted authorities in ornithology is readily admitted. That it is migratory in northeastern Texas, especially in Cooke County, is proven from my note book showing its departure in April and May and its return in July and August, for a number of consecutive years.

The question then to be considered is, what constitutes a *suitable* nesting locality? I readily admit that I don't know. If a belt of timber (post oak, black oak, elm, black walnut, black hickory, etc.) fifteen miles wide and one hundred miles long is not suitable for the nesting of this bird, then I need not expect its young to be raised in Cooke County.

But Mr. Lloyd records its nesting in Tom Green County, Texas, where the timber is more scrubby than in Cooke County. How is the bird's behavior in this matter to be reconciled with its not breeding in Cooke County? I must again confess ignorance of the reason. The only place I have personal knowledge of the birds' breeding in the State is in Polk County, in the Pine Region of southeastern Texas. In April, 1889, I saw the birds paired and entering holes in the dead pines, in such manner that I felt convinced that they would remain during the season. Mr. J. A. Singley, in Lee County, some seventy-five miles west of Polk County, writes me, "I have never found the Sparrow Hawk breeding in Texas or Mexico." However, he has a report of its nesting in Lee County, in former years. A great many eastern 'species' of birds fail to penetrate the dry plateau region of Texas. Many varieties (subspecies) of eastern forms,

occur in this plateau region. Perhaps the Sparrow Hawk of the plateau region of Texas, in which Tom Green County is situated, will prove to be distinct from the eastern bird when more carefully studied.—G. H. RAGSDALE, *Gainsville, Texas*.

Great Gray Owl in Worcester County, Mass.—A Great Gray Owl (*Scotiaptex cinerea*) was killed in Princeton, Feb. 28, by E. T. Whitaker, a member of the Worcester Sportsmen's Club. The day was severely cold, the thermometer registering 4° below zero. This is the first record for this species in this County.—GEORGE B. CHURCHILL, *Worcester, Mass.*

Acadian Owl (*Nyctala acadica*) at Washington, D. C.—The Acadian Owl has always been considered of extremely rare occurrence at the Capital; in fact until the present winter but five specimens were known from this locality. The first of these was taken by Mr. Drexler some years ago, which was followed by an occasional capture from time to time. On December 12, 1890, an adult male was taken by Mr. Walter B. Barrows three miles east of the city at Brookland. This served as a stimulus for close search, and on January 4, 1891, reward came in the shape of three females taken by Mr. J. D. Figgins and myself. These were mostly in a dense thicket of pines, less than half an acre in extent, and the peculiarity especially noticeable was the fact that not a single male was to be found, although we searched the woods again and again, as well as neighboring patches of pine. On Feb. 4 or 5, 1891, one flew into the Smithsonian building where it was captured alive, and now serves as one of the attractions of the 'Zoo', making a total of five taken the past winter, or as many as all previous records taken together.

It would appear from this that the species is much more common than ordinarily supposed, but if such be the case it is strange that no more have been taken, as scarcely a week has passed that Mr. Figgins and myself have not spent at least one day in the woods, and always with an eye open for *Nyctala*, but since the record of January 4, not a feather has rewarded our efforts, and it must, I think, still be considered as one of the rarer birds of the district.—EDWIN M. HASBROUCK, *Washington, D. C.*

Occurrence of the Groove-billed Ani at Jupiter Inlet, Florida.—While at Palm Beach, Lake Worth, Fla., my friend, Mr. Franz Kinzel, a resident there, informed me that an example of *Crotophaga sulcirostris* Swains. had been shot during the first week in January last at Jupiter Inlet. Mr. Kinzel examined the bird, and identified it himself with the aid of Ridgway's 'Manual,' in which it is stated that this species has only occurred in the United States in the Valley of the lower Rio Grande in Texas, thence extending southwards to Peru.—A. S. PACKARD, *Brown University, Providence, R. I.*

Groove-billed Ani (*Crotophaga sulcirostris*) in Arizona.—A specimen of the Groove-billed Ani is now in my possession which was shot about

the middle of May, 1888, at the Batterman Ranch in the foothills of the Huachuca Mountains, ten miles north of the Mexican border in Cochise County, Arizona. The specimen was shot by Mr. O. C. Smith of Tombstone, A. T., from a live oak tree on the ranch, and was in the California Academy of Science, with the Price collection of Arizona Birds, until presented to me by Mr. Smith the past winter. — OTHO C. POLING, *Arizona*.

The First Plumage of *Otocoris alpestris strigata* Hensh. — ♀ juv. (No. 5080, collection of G. S. Miller, Jr., Salem, Marion Co., Oregon, June 29, 1890; Allen Rhodes collector): Plumage of dorsal surface seal brown, the feathers everywhere edged with ochraceous-buff, which color is most conspicuous on the upper tail-coverts, rump, cervix, remiges and wing-coverts; interscapulars, scapulars and some of the tertials and wing-coverts tipped with dirty white; rectrices slightly darker than remiges and general dorsal surface, the outer pair tipped and edged externally with dirty white, the inner pair much suffused with ochraceous-buff; ventral surface pure white; chin and throat slightly marked with dusky; jugulum, sides, and flanks ochraceous-buff, flecked, especially on the jugulum, with obscure brownish; cheeks, lores and forehead mixed brown and whitish. The first plumage of this form resembles more closely the young of *practicola* than it does the corresponding stage of any of the western races. The white edgings of the feathers of the back, so conspicuous in the young of *merrilli*, are here replaced by ochraceous-buff; while the dark ground color above makes it a very different looking bird from the young of any of the other forms found in the western United States. From the first plumage of *practicola* I am able to find no distinguishing character, except that the buff is everywhere brighter than in the brightest *practicola* that I have seen. The young of *practicola* are very variable in the shade of both ground color and markings, and it will be interesting to see whether further material will show as great a range of variability in the young of the present race. — G. S. MILLER, JR., *Cambridge, Mass.*

European Goldfinch (*Carduelis carduelis*) Breeding in Worcester County, Mass. — There have been brought to the rooms of the Natural History Society in this city a nest and five eggs of the European Goldfinch (*C. carduelis*), with the skin of the female. They were taken in Northville, a suburb of this city, July 11, 1890, by Mr. F. S. Wilder. The nest was in an apple tree within seven feet from the ground, and corresponds to the description in Ridgway's 'Manual,' except that it contains no moss. The female is in fair breeding plumage. The male was not seen. — GEO. CHURCHILL, *Worcester, Mass.*

Description of the Nests and Eggs of *Dendroica graciae* and *Contopus pertinax*. — Among my oölogical accessions of the past season were the nests and eggs of two species not described heretofore, viz., *Dendroica graciae*, Grace's Warbler, and *Contopus pertinax*, Coues's Flycatcher, both

collected by Mr. H. Keays for Prof. H. P. Attwater, in Yavapai Co., Arizona. Skins and nests accompanied both sets of eggs.

Dendroica graciae. Nest placed on limb of pine tree sixty feet from the ground. Nest very compact; outside diameter 3 in. by 1 $\frac{1}{4}$ in. high; inside diameter 1 $\frac{3}{4}$ in. by 1 $\frac{1}{4}$ in. deep. The body of this nest is composed of horse-hair, strings and vegetable fibres. The most abundant vegetable material interwoven consists of the staminate catkins and bud scales of *Quercus emoryi*. There is also some wool, vegetable down, and insect webbing, in which are entangled the exuviae of some caterpillar. Attached on the outside was a small staminate cone of a species of *Pinus*. Nest well lined with feathers and horse-hair. The three eggs were well incubated. Their ground color is creamy white, marked over entire surface, but more heavily at larger end, where they form a wreath, with light umber and an occasional speck of dark chestnut; lilac shell markings at larger end only. Measurements, .51X.70, .50X.69, .50X.68 in.; average, .50X.69. Collected June 23, 1890.

Contopus pertinax. The nest, placed on an oak limb twenty feet from ground, is compact, and reminds one of the nest of our *C. virens*, excepting in size. Outside diameter 5 in. by 2 in. high; inside diameter 3 in. by 1 in. deep. The body of the nest seems to consist of the web of some spider intermingled with the exuviae of some insect, fragments of insects, and vegetable matter, such as staminate catkins of *Quercus emoryi* and a pod of *Hosackia*, some leaves of *Quercus emoryi* and *Q. undulata*. The interior of the nest is made up of grasses, principally of two species of *Poa*, also some fragments of a *Bontelona* and a *Stipa*. The eggs, three in number, were slightly incubated. The ground color is creamy-buff, spotted in a ring round larger end with chestnut and lilac-gray. Measurements, .63X.86, .62X.83, .61X.83 in.; average, .62X.84. Collected June 17, 1890. I am greatly indebted to Messrs. Wm. Brewster of Cambridge, Mass., Josiah Hoopes of West Chester, Pa., and John M. Holzinger of Washington, D. C., for the identification of the above skins and nesting material. — SAMUEL B. LADD, *West Chester, Pa.*

A Female *Piranga rubra* Assuming the Plumage of the Male. On the 27th of May of the present year my son Percy W. Shufeldt collected at Takoma Park, in Montgomery County, Maryland, a female Summer Tanager having a plumage so unusual that a record of it would seem worthy of presentation. The species is by no means uncommon in the locality where it was taken, and the specimen is apparently an adult, of several years of age. In coloration her plumage about corresponds with that of a young male of this species during the first summer, or an adult female with the following differences;—the plumage of the upper parts is thickly interspersed with the dark red feathers which characterize the male, and the plumage of the entire under parts is thickly beset with bright vermillion-tinted feathers. Many of the secondaries of the wings are also bright red, as is also the outer tail-feather of the left side. I personally examined the sex of this specimen on dissection, and found her ovary to

contain ova varying in size from a No. 10 shot to that of a small pea. The skin of this bird is at present in my son's collection.—*Dr. R. W. Shufeldt, Smithsonian Institution, Washington, D. C.*

Capture of *Geothlypis poliocephala palpebralis* in Cameron County, Texas—Recently Mr. Charles K. Worthen of Warsaw, Illinois, sent me for identification a specimen of *Geothlypis poliocephala palpebralis* (Ridgw.), an adult male, taken by one of his collectors at Brownsville, Cameron County, Texas, June 8, 1890. On my questioning the correctness of the alleged locality, Mr. Worthen made special inquiries respecting the capture of this specimen, and writes me that his collector assures him the specimen "was taken in Brownsville, Texas." It being the first one he had seen, he sent it to Mr. Worthen for identification. This specimen is now in Mr. Worthen's collection.

This forms the first record of the species for the United States. Mr. George B. Sennett, however, has in his collection a single specimen from Aldema, Tamaulipas, Mexico, collected June 13, 1888. These specimens are both referable to the form Mr. Ridgway has recognized as *Geothlypis palpebralis* (Man. N. Am. Birds, 1887, p. 526).—one of the several closely allied forms of the *G. poliocephala* group.—J. A. ALLEN, *Am. Mus. Nat. Hist., New York City.*

Bachman's Warbler (*Helminthophila bachmani*) at Raleigh, N. C.—On April 27, 1891, while walking near a small woodland stream I heard the note of a Warbler unfamiliar to me but which reminded me of the song of the Parula without the rise at the end. The sound came apparently from the low bushes in the brook, but I could see no bird. I followed the sound up the brook till I reached a thicket at its head, where I waited. On hearing the notes again I crossed the brook and found the bird was in the woods in front of me. In a few seconds I saw a bird with a black throat about 15 ft. from the ground in the lower limbs of a small oak, and immediately after collected my first Bachman's Warbler. While in the oak the bird suggested *Dendroica virens*, but the song prevented my mistaking it for that species.

This specimen was apparently in breeding condition as the testes measured $5\frac{1}{2}$ by $4\frac{1}{2}$ mm., but I could detect no other birds with it, except a pair of Bluegray Gnatcatchers which were building near the same brook.

On May 22, I took my second specimen of this species, in a woodland thicket on the edge of Walnut Creek, within a few feet of where the above mentioned brook flows into the creek. I may here mention that since killing the first specimen I had on three occasions followed and killed Wormeating Warblers, on account of the similarity of their song to that of Bachman's Warbler. When the song of Bachman's Warbler fell on my ears on this second occasion, I remarked to my brother, who was with me, "I hear a Warbler singing that is either a Wormeater or a Bachman's." I followed the notes up the creek till at last I caught sight of a bird with a black throat in a small birch and immediately shot it. Another bird flew

chipping into another birch and also fell a victim, but this was only a male Prairie Warbler, and not the mate of my Bachman's. This Bachman's was also a male, the testes measuring $6\frac{1}{2} \times 4\frac{1}{2}$ mm. The song, as in the previous instance, seemed to come from the low bushes near the ground, while the bird was ten feet from the ground when shot.

These two captures, I believe, extend the range of Bachman's Warbler considerably further north than was previously known, and make it probable that it breeds not far from here, though perhaps not in this immediate vicinity. I may add that I have searched for this species with great care since capturing my first specimen but without any success except on the second occasion of its capture and then I wasn't looking for it.—C. S. BRIMLEY, *Raleigh, N. C.*

Note on *Mimocichla verrillorum*.—In the last number of 'The Auk' (VIII, p. 217) I described what was supposed to be a new species of *Mimocichla* from the Island of Dominica, and assumed it to be the first record of the genus for the Lesser Antilles. For the time being I had forgotten a recent paper by Dr. P. L. Sclater (P. Z. S., 1889, p. 326), giving a list of the birds of Dominica, and recording therefrom a form of *Mimocichla*, called by him *M. ardesiaca albiventris*. I was unfortunately not reminded of this paper till after the publication of my own, otherwise I should doubtless have adopted Mr. Sclater's name for the species in question, although he failed to point out some of the principal differences distinguishing this form from its allies. Mr. Sclater says: "As might have been expected, the Dominican *Mimocichla* belongs to the Porto Rican form. It is, in fact, so nearly similar that I do not see sufficient grounds for making it specifically distinct. The only difference apparent is the much greater whiteness of the belly in the Dominican species, whence those who adopt trinomials would, no doubt, call it *Mimocichla ardesiaca albiventris*." As in a later reference to it in the same paper he says: "Besides these there are two peculiar subspecies, namely *Mimocichla ardesiaca albiventris*," etc., he evidently intended to recognize it as a subspecies. As the name *albiventris* has priority by several months over *verrillorum* the species will stand as *Mimocichla albiventris* (Scl.), on the basis of the characters given in my former paper.—J. A. ALLEN, *Am. Mus. Nat. Hist., New York City.*

The Robin Wintering at Godbout, Quebec.—I desire to place on record what is to us here a most unusual occurrence, viz, the wintering of the Robin (*Merula migratoria*) on the north shore of the St. Lawrence. On looking over my notes on the species, extending over twelve years, I find that the latest bird previously seen was noted on December 5; other years from 25th to 30th November. Arrivals in the spring have been noted from April 18 to May 6. This year I kept recording their occurrence day after day, always expecting that it was going to be the last seen, but they are here still (Feb. 4, 1891), and intend to stay I believe. Every day when the tide falls, leaving the rocks or some shoals bare, they flock to

these places in hundreds for the purpose of picking up gravel and small shells; when these places are covered with ice, as often happens, they hop about from one piece of ice to another, following the shore line, evidently thinking (if birds can think) there must be something wrong. I have shot several from time to time to see what their crops contained, and invariably found in them small shells, principally minute, blackish whelks, gravel, and the fruit of the mountain ash, and sometimes bits of seaweed.

All the birds I shot were in first rate condition. The winter has been a very severe one — Feb. 2 and 3, 24 and 32 degrees below zero (Fahrenheit) — but this does not seem to trouble them at all. The reason for their wintering here is possibly due to the enormous crop of mountain ash berries. — NAP. A. COMEAU, *Godbout, Province of Quebec.*

On Two Birds New to Louisiana. — In a small collection of birds recently purchased from C. S. Galbraith by the American Museum of Natural History, are two species which have not been before recorded from Louisiana; they are:—

Helminthophila leucobronchialis.—(Am. Mus. No. 54815, Mandeville, La., Spring of 1891. Collector C. S. Galbraith. Sex not determined but the example is evidently a male.) So far as pattern of marking is concerned this specimen agrees with *Helminthophila pinus*. In coloration it is midway between *pinus* and typical *leucobronchialis*, that is, the underparts are white with a patch of yellow on the breast and more or less of this color on the chin and abdomen, while the upper parts are bluish with a greenish wash. The tips of the wing-coverts are more heavily marked with yellow than in normal specimens of *pinus*, a fact not in strict accord with Mr. Ridgway's theory of dichromatism in this puzzling group. (Cf. *Man. N. A. Birds*, p. 486, footnote.) If with Mr. Ridgway we assume this specimen to be a "leuchroic" example of *pinus* we should not expect that a diminution of yellow on the abdomen and back would be attended by an increase of yellow on the wing-coverts.

Spizella pusilla arenacea. (Am. Mus. No. 54809, Mandeville, La., Winter of 1891. Collector C. S. Galbraith. Sex not determined.) A typical example of this Sparrow, in winter plumage. — FRANK M. CHAPMAN, *American Museum of Natural History, New York City.*

CORRESPONDENCE.

[Correspondents are requested to write briefly and to the point. No attention will be paid to anonymous communications.]

Florida Heron Rookeries.

TO THE EDITORS OF THE AUK:—

Dear Sirs: Appreciating as one must the notes of Mr. H. K. Jamison of Philadelphia on 'Some Rookeries on the Gulf Coast of Florida,' pub-

lished in 'The Auk' (Vol. VIII, p. 233), I think perhaps an explanation is due to that gentleman and to other readers of this journal.

All assertions are in a way, I take it, comparative, and when I wrote that "there are absolutely no Heron Rookeries on the Gulf Coast of Florida, from Anclote Keys to Cape Sable" (Auk, Vol. VII, p. 221), I was fully aware of the small isolated breeding ground recorded by Mr. Jamison, as well as of a few others of similar character, though generally smaller, along the coast in question.

But I think that if any of your readers could have accompanied me over the same ground in 1874, in 1878, or even in 1880, they would have fully concurred with me in the statement quoted by Mr. Jamison, had they traversed the ground again in the spring of 1890.

It is true that there are still small isolated colonies of Herons breeding this year on one mangrove island, and driven to another in the succeeding years. But the great Heron Rookeries of Tampa Bay, Samsota Bay, Charlotte Harbor, and the Thousand Islands, where the countless myriads of Herons were so noticeable a feature in the landscape as to attract the attention of *any one* from a long distance, no longer exist.

Not the three hundred nests that Mr. Jamison speaks of, but many, many *thousands* of nests composed such rookeries, and he would have patience indeed who could count the nests in a single acre of the two hundred acres, or thereabouts, that are included in the single rookery known as late as 1878 as 'Maximo Rookery,' just west of and near the end of Point Pinnellas at the mouth of Tampa Bay. At the same time in Charlotte Harbor there were at least five great rookeries of about equal size that I knew from personal observation. So, when I pass over this same ground now and find only here and there a few birds together, I feel I am justified in the view expressed in 'The Auk' and quoted by Mr. Jamison.

Very truly,

58 William St., New York City.

W. E. D. SCOTT.

'Birds of Greenland.'

TO THE EDITORS OF THE AUK.

Dear Sirs:—I wish to make a few statements relating to the just issued 'Birds of Greenland' by M. Chamberlain and myself. By correspondence with Mr. Herlup Winge of the Zoölogical Museum of Copenhagen I learn that two of the birds enumerated in the book are to be omitted. I here cite a letter of Mr. Winge:—

"At least two species should be omitted: (1) *Sterna hirundo (fluviatilis* Naum). The insertion of this species must be due to misinterpretation of synonyms. Only one species of Tern, the Arctic Tern (*Sterna macrura* or *S. paradisea*) being known from Greenland.

(2) *Empidonax pusillus*. The *Empidonax* from Greenland in the Zoological Museum of Copenhagen was wrongly entered by Reinhardt as *E. pusillus*; it is *E. flaviventris*, also later found in Greenland by Mr. Kumlien. Reinhardt himself detected the error and labelled the specimen correctly."

The Museum of Copenhagen has received from Greenland specimens of five species hitherto not known as Greenland birds. Mr. Winge gives their names as follows:—*Coccyzus americanus*, *Scolecophagus carolinus*, *Dendroica maculosa*, *Dendroica pensylvanica*, and *Seiurus noveboracensis*.

As the Museum intends in two years or so (when the Danish expedition, which now goes to explore the east coast of Greenland, has come back) to publish a treatise on Greenland birds, Mr. Winge wished that the dates about these species should first be made known through this treatise, so I must regret my inability to give them here.

Holboel mentions that he sent to the Museum of Copenhagen a skin of *Somateria*, which I supposed to be a *Somateria V-nigra*, but Mr. Winge informs me that the Museum is not in possession of a Greenland skin of *Somateria*, which can be interpreted as *Somateria V-nigra*, which thus becomes still more problematic as a Greenland species.

I have just received a lot of Greenland bird-skins and eggs from Fredrikshaab (in lat. 62°). Of eleven skins of Gyrfalcon six are white and five gray. Two of the gray birds were shot in October, 1889, and two of the white ones in the same month; three white ones in December, 1889; the rest are unlabelled. One of the gray Falcons is so dark that it in my opinion must be a *Falco rusticolus obsoletus*. Perhaps the whole scale of color is found in Greenland.

Of seven skins of *Gavia alba*, four adults (two males and two females), were shot 26 Feb., 1890; an old male 18 April, 1890, and a young male 24 Nov., 1889. With them was a skin of *Zema sabinii*.

ANDREAS T. HAGERUP.

Viborg, Denmark.

NOTES AND NEWS.

THE PLATE of the Eared Whip-poor-will (*Otophanes mcleodii* Brewster) accompanying this number of 'The Auk' is the first of a series of colored plates illustrating birds recently described from Mexico by Mr. Brewster. The second of the series, illustrating two species of *Megascops*, will appear in the October number. Later appropriate text will be furnished to accompany the plates. The Eared Whip-poor-will was described in 'The Auk,' Vol. V, 1888, p. 89, from a specimen collected by Mr. R. R. McLeod, in the Sierra Madre of Chihuahua, Mexico, Dec. 6, 1884. The characters of this peculiar bird have been faithfully portrayed by Mr. Ridgway. The type remains unique.

JOHN C. CAHOON, widely known as a field naturalist, and an energetic, expert, and conscientious collector, met his death at Curslet, Newfoundland, April 26, by a fall from a cliff, while collecting, to the rocks, seventy

feet below. Mr. Cahoon was born at Harwich, Mass., September 6, 1863, and for the last seven or eight years has been what may be termed a professional ornithological collector. Besides collecting extensively on Cape Cod, and at various points on the Massachusetts coast, he passed one season on the Gulf Coast of Florida, and has made various trips to Newfoundland. One of his most important expeditions was a trip to Arizona and Sonora in the interest of Mr. Brewster, where he spent six months, mostly in the remote and dangerous part of the mountain region of Sonora. He returned with a collection of over twelve hundred specimens, including representatives of a number of new species and subspecies, several of which Mr. Brewster named in his honor. Mr. Cahoon was widely known among ornithologists, by whom he was greatly respected for his energy, industry and skill as a collector and his keenness and intelligence as an observer. The news of his sad ending was a painful shock to his many friends.

MESSRS. H. Y. BENEDICT and Charles D. Oldright, of the University of Texas, Austin, Texas, are engaged upon a 'Catalogue of the Birds of Texas.' They intend to make it as complete a list as possible of the avifauna of this great State. In addition to their own work they are promised the aid of prominent Texan ornithologists. They will make use also of the published works and papers bearing on the subject. It is their intention to give a brief account of bird distribution in the State, in relation to topographic and climatic conditions, the State including several very distinct regions. Considering the extent of the area, and the large number of species represented in the State, they find the material for such a work scanty, and earnestly request the co-operation of all persons who have original and unpublished matter in their possession. The work will close with a bibliography of Texan ornithology.

ON JUNE 6 the whaling steamer 'Kite' sailed from New York for Greenland, having on board two exploring parties, bound respectively for North and West Greenland. The first of these parties, under command of Lieut. Peary, will land at Whale Sound, latitude $77^{\circ} 30'$ north, near which they will pass the remainder of the present season, exploring the immediate region and laying in a winter's supply of meat. Early in the spring the party set out for the exploration of North Greenland. Mr. Langdon Gibson, of Flushing, Long Island, an Associate Member of the A. O. U., accompanies the expedition as ornithologist. The West Greenland party, under Prof. A. Heilprin, will be accompanied by Prof. W. E. Hughes as ornithologist. This party, working southward from Whale Sound to Upernavik or Disco Bay and Godhaven, will return early in September.

THE DEATH VALLEY Biological Expedition, under Dr. C. Hart Merriam, mentioned in the January number of 'The Auk' (p. 122), has met with ex-

cellent success in its work, thousands of specimens having been transmitted to Washington. The exploration of Death Valley proper having been completed the work has been extended to neighboring points, Dr. Merriam himself making an extended reconnoissance across Arizona, southern Utah and Nevada. The party has recently been joined by Mr. Basil H. Dutcher of New York City.

IN THE January 'Auk' (p. 123) reference was made to a proposed investigation of the North American forms of the genus *Colaptes*, by Mr. J. A. Allen. It is Mr. Allen's intention to begin his study of the group at once, and to present the results in a paper to be read before the next Congress of the A. O. U. Considerable material has been received and much more offered. The purpose of the present note is to inform those who are willing to send material that its prompt transmission will now be considered a great favor. As stated in the former notice, large series of specimens from the Plains westward to the Pacific, and from Manitoba and British Columbia southward into Mexico are especially desired. Specimens taken in the breeding season are especially solicited, although examples taken at any season cannot fail to be of service. The packages should be addressed to the care of the American Museum of Natural History, 77th St. and 8th Avenue, New York City.

IN DECEMBER, 1887, as the readers of 'The Auk' will remember (see Auk, IV, p. 359, V, pp. 123, 221, 336, 448), a movement for the erection of a monument to John James Audubon in Trinity Cemetery, New York City, was organized under the lead of a committee of the New York Academy of Sciences of which Professor Thomas Egleston was Chairman and Dr. N. L. Britton Secretary and Treasurer. It was estimated that a suitable monument would cost from \$6,000 to \$10,000. Appeals were made, through circulars and otherwise, to the scientific men of America and elsewhere, and especially to ornithologists, for contributions to the fund. While a few contributed promptly and liberally, there was on the whole a surprising and discouraging lack of interest in the matter, and for three years the prospect of realizing the plans of the Committee were far from hopeful. As a last resort, a direct appeal was made by the Chairman to some of the wealthy citizens of New York City; many subscriptions ranging from \$25 to \$100 each, were immediately sent in response, besides a much larger number ranging from \$5 to \$15 each. The total amount raised up to the middle of June of the present year is very nearly \$7,000, only about \$3,000 remaining to complete the sum of \$10,000. It is to be hoped that the many ornithologists who, through doubt of the feasibility of the movement or for other reasons have hitherto failed to respond, will now promptly aid in completing the now comparatively small amount lacking of the sum needed. Contributions may be sent to Mr. William Dutcher (525 Manhattan Ave., New York City), Treasurer of the A. O. U. Audubon Monument Committee, or to Professor N. L. Britton (Columbia College, New York City), Treasurer of the New York Academy Committee.